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INDIA

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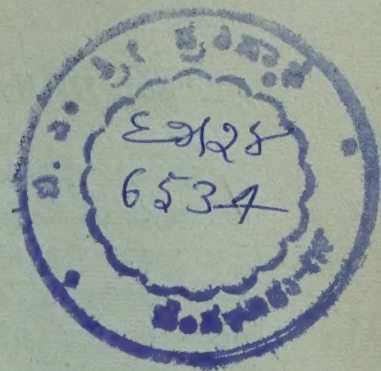
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LINGUISTIC STRATIGRAPHY OF NORTH INDIA

Franklin C. Southworth

1. Introduction

The existence of area-wide features in South Asian languages, which cross the boundaries of originally distinct linguistic families, prompts various questions about the ways in which such features came to be shared. In which languages did they originate? When, and under what conditions, did they diffuse into new areas? What are the social processes involved? In the case of Indo-Aryan, the principal question to be answered is: how did it happen that an elite language, brought into the subcontinent by a people who established political and military domination over the whole of North India in prehistoric times, undergo such extensive structural influence at the hands of indigenous languages? The present paper is an attempt to provide a tentative answer to this question. In part 2, I summarize the relevant historical and prehistorical evidence (drawn from archaeology, physical anthropology and classical literature) on this point. Part 3 presents the linguistic evidence for the extent of convergence and the influence of indigenous languages. Part 4 is a discussion of dialect divisions in Indo-Aryan, which includes some new evidence relating to linguistic substrata. In part 5, I attempt to trace a plausible course of events, on the basis of historical and linguistic evidence and modern parallels.

2. Historical assumptions

Following are, in brief, the historical assumptions which limit the possible pictures that can be constructed of the linguistic developments. Because of the nature of prehistoric evidence, many of these are negative assumptions, i. e. they indicate that certain developments cannot be assumed to have necessarily taken place.

(1) The Indo-Aryan languages, including the modern spoken vernaculars as well as earlier attested stages (Vedic, Classical Sanskrit, and the Prakrits), are clearly related to Indo-European

languages spoken in western Europe. Though we have no direct evidence of the original area in which the earliest form of Indo-European was spoken, the evidence is against it being near South Asia (Thieme 1953). Therefore it can be assumed that speakers of an early form of Indo-Aryan (IA) probably entered the subcontinent in prehistoric times.

(2) Languages of three other stocks (Dravidian, Munda and Tibeto-Burman) appear to have been spoken in the subcontinent from an early period, possibly prior to the appearance of IA speakers. Munda languages, now spoken by small scattered groups, may possibly have been more widely distributed at an earlier period (Emeneau 1956). Tibeto-Burman languages are now largely limited to the North and North-east (Tibet, Nepal, Bhutan, Sikkim, Assam Bengal, Bangladesh), but see below for linguistic evidence on the possibility of earlier wider distribution. Dravidian languages appear to have covered a large part of the sub-continent in prehistoric times, judging by the presence of small Dravidian speaking groups in widely-scattered locations such as Baluchistan (Brahui), Nepal (Dhangar), and Bihar (Kurukh)—apart from the bulk of Dravidian languages spoken in the south of the peninsula.

(3) Though there is no archaeological evidence which can be positively associated with the IA speakers, it is possible to identify them with the “waves of intruders” who entered from the west during the second millenium B. C. (Allchin 1968 : 323-4). This identification is tentative, but will stand as long as no more likely candidates are found.

(4) The Harappan civilization, known from archaeological sites located mainly in the Indus Valley (Pakistan) and the west coast (Pakistan and Gujarat), appears to have existed from the first half of the third millenium B. C. until the second half of the second millenium B. C. (Allchin 1968 : 150 (See figure 1). The nature of the larger sites, such as Mohenjo-Daro, Harappa, and Lothal, suggests a socially stratified and technologically advanced civilization (Wheeler 1959). The time span assumed for these sites clearly overlaps with the period assumed for the arrival of IA speakers, though the relationship between these people and the Harappan civilization is unclear. The earlier belief that the Aryans destroyed Mohenjo-Daro and other Harappan cities is now seriously disputed (Allchin 1968, Fairservis 1967). Further more, there is evidence to suggest that the collapse of these cities may have been at least in part due to ecological factors (Fairservis 1967).

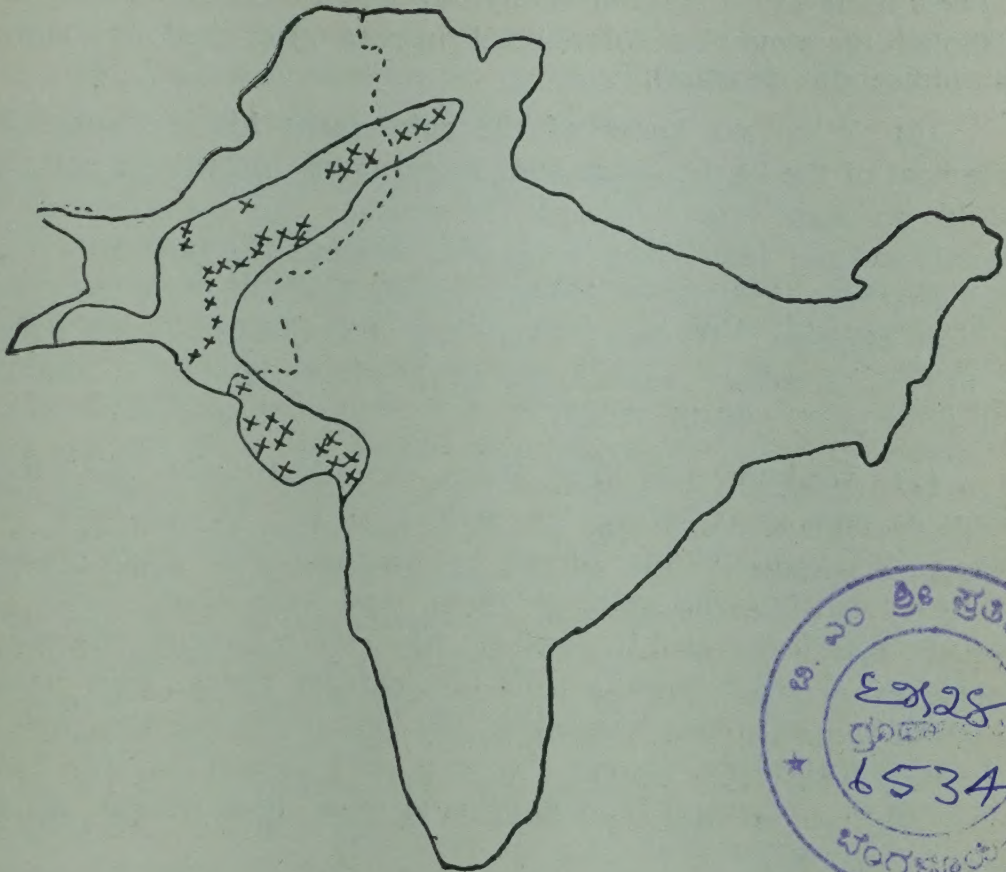


Figure 1: Principal sites of the Indus Valley civilization
(after Wheeler 1959:95)

The debate on the language of the Harappan seals is still unresolved, though the principal candidates seem to be Dravidian (possibly proto-Dravidian? – see Parpola et al. 1969) or Indo-Aryan. There is no basis for excluding the possibility that the civilization included bilingual or multilingual regions at some periods. At Mohenjo-Daro and other Harappan sites, at some periods during their existence, Indo-Aryan and/or Dravidian languages, as well as others, may have been spoken. In fact, given what we know of linguistic heterogeneity in South Asia in subsequent periods, it is rather unlikely that this civilization was monolingual.

(5) It is clear however that some speakers of IA were in a dominant position in northern India at an early period. The principal evidence for this is linguistic – the dominance of Vedic is ritual language, and of Sanskrit as a literary, scholarly, and administrative medium. The present distribution of IA languages also attests to this early dominance. The reasons for this dominance presumably include military organization, the mastery of horses and chariots in warfare, as well as bows and other weapons, in addition to their

language itself and the elaborate hymns and rituals associated with it (though these may have developed in part after the first contact with Indigenous peoples).

(6) What we know of the subsequent history suggests a movement of the IA language and its speakers toward the east, and possibly to some extent toward the south. The evolution of the Rigveda and the later Vedic literature suggests the eastward movement (Basham 1959; Bloch 1934), though again there is no direct physical evidence. It seems likely that IA speakers were part of the urban civilization which arose in the Gangetic plain in the first millenium B. C. (Allchin 1968).

(7) We know very little about the identity of the peoples occupying these areas before the arrival of the IA speakers. The area of the Ganges delta is linked by archaeological finds to areas east of the subcontinent (Allchin 1968), and thus it is likely that these areas were occupied by speakers of Tibeto-Burman languages. The Deccan shows continuity from the earliest times, with links to the south (Allchin 1968), suggesting the possibility of the presence of Dravidian speakers, though "new traits" appear in the second millenium B. C. Central India appears to have been rather sparsely populated in early periods (Allchin 1968:327).

(8) There is no evidence for any great population movement or for any large-scale massacre of people, at any time. In fact, the evidence of physical anthropology suggests a continuity of physical types in the subcontinent from the late stone age upto the present (Kennedy 1965). Thus, the notion of great hordes of Aryans driving the indigenous population before them has little to recommend it, except in the context of fiction or drama. The original IA speakers may have arrived in small bands, possibly in successive waves, over a long period of time. As new groups arrived, some may have moved on to new areas, and some may have remained.

(9) Whatever new groups entered the subcontinent appear to have interbred with the local population, since there is no group which is physically distinct, either now or in earlier periods (see above). This does not exclude the possibility that some physical traits may appear in higher percentages in certain social groups. On the other hand, some such traits (such as the alleged correlation between fair complexion and high caste in some areas) may also be due in part to long-term social selection.

(10) It follows from assumptions (8) and (9) that the equation of IA speakers with "Aryans" (i. e. the original intruders

and their direct descendants) is not supported by historical evidence. Except in the initial period, it is likely that a significant number of speakers of IA were of indigenous or mixed descent. (See Section 5 below for further discussion of this point.)

3. The nature of linguistic convergence in Indo-Aryan

The changes in IA which can be attributed to the influence of indigenous languages are *predominantly non-lexical*. They involve various types of features such as phonetics, morphological categories, word order, semantic distinctions (see examples below), but only rarely do we find direct lexical borrowing, i. e. the importation of surface morphs from the indigenous languages into IA. Some of the exceptions to this statement are discussed by Emeneau (1954), who presents etymologies for thirteen early IA (Vedic or Epic) words, for which Dravidian origin seems fairly certain. This list includes several words for local fauna and flora, but also some of less specialized meaning, such as those meaning 'water', 'art', 'fruit', and 'strength'. Another word which might have been examined in this context is the word for 'rice' or 'paddy' (Skt. *vrihi*). This word occurs in the Rigveda, and has generally been accepted as an early IA word. No one seems to have wondered where the early Aryans got a word for rice, and the possibility of deriving it from a Proto-Dravidian **ari* or **vari* (cf. Tamil *ari*, *arici*, *vari*, etc. in Burrow and Emeneau 1961, entry numbers 178, 4306) does not seem to have occurred to Sanskritists.

In section 5, I will attempt to show a parallel between the early IA-Dravidian contact situation, and the modern situation which produced Indian English. Here, it may be worth noting some parallels in the type of borrowed items. For modern examples of the use of local terms for fauna and flora, we need only turn to the nearest agricultural officer to hear passages like the following:¹

...you see, this IR-8 rice is a bit coarse variety, one can't compare it with our usual fine varieties like *vaykuntaa* and *kiccili*...

...they used to grow only normal local varieties-*kaar*, *ku||aakaar*,...

Other early borrowings are likely to have been motivated either by the cultural importance of the term indigenous language, or by its frequency. A case of the former type can be seen in a group of Marathi words which includes *aaii* 'mother', *baaii* 'woman, wife, suffix to given name', *taaii* 'elder sister' (cf. the Dravidian group including Tamil *taay* (as in *taay-viitu* 'mother's home'), etc.).

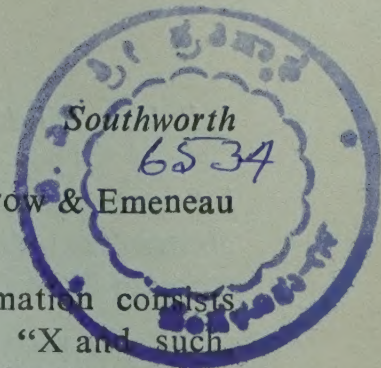
Modern parallels include terms of address like *ceriamma* 'mother's younger sister' used in Malayali English.

A case of the latter (high-frequency) type can be suspected in the Marathi verb 'to be' (*aahe, aahes, aahe, aaho(t), aahaa(t), aahet*), with its mysterious initial *aa-* (compare Hindi-Urdu *huu, hai, hai, hai, ho, hai*). Derivation from Skt. *bhavati* 'is' is phonologically appropriate for the Hindi-Urdu forms, and although etymologists have proposed Skt. *aa-bhavati* for the Marathi forms (see Turner 1966 s. v.), one wonders whether the ubiquitous Dravidian verb *aa-* 'be, become' (see Burrow and Emeneau 1961) has not somehow gotten into the act. Though exact modern parallels are lacking, we find similar cases like the *na* of North Indian English (e. g. You are coming, *na?* = You are coming, aren't you?), or the *-aa* of Tamil English (e. g. You are coming *-aa?*)

As compared with the scanty evidence for lexical borrowing, the evidence for structural convergence is very impressive. In a large number of cases we find evidence to support the supposition that Indo-Aryan morphs (some of them traceable back to Proto-Indo-European) have been used to realize syntactic constructions and semantic distinctions which derive from non-IA sources within the sub-continent. Emeneau has referred to one of these cases, the IA gerund construction, with the very apt phrase, "this re-use in India of older material" (1956:9). Following are brief summaries of the evidence given on this point by myself and others (for modern parallels in Indian English, see section 5 below):

(1) *the retroflex-dental contrast* (see section 4 below): cf. (Emeneau 1956:7, and Kuiper's paper in this volume). most languages of the sub-continent have this feature. Of the major IA languages, only Assamese lacks it.² It is almost universal in Dravidian, and must be reconstructed for proto-Dravidian. It is frequent in Munda languages, but probably not original (Zide 1958:47, note 10). Clearly, this feature entered Indo-Aryan not through lexical borrowings, but imperceptibly via allophonic changes which later became phonemic. Thus, this was a very different sort of change from those which introduce new phonemic contrasts through loan words (e. g. English /z/ in *rouge, garage, genre*, etc.).

(2) *syllable structure*: a series of changes in MIA (loss or spirantization of most intervocalic stops, contractions of vowel sequences, assimilation of consonant clusters) led to a result "suspiciously close to the structure of PDr." This can in fact still be seen in some varieties of Panjabi, in which double and single stops are not in contrast (at least, in inherited words): this can be



compared with the situation in PDr. described in Burrow & Emeneau 1961 : xii-xiii.

(3) *echo words* (Emeneau 1956 : 10): this formation consists of a type of reduplication of nouns with the meaning "X and such X and others like X", and is found in all areas and families of the subcontinent. The reduplication is formed by the same basic rule in all languages, i. e. $(C_1)VC_2... \rightarrow XC_2...$ though X has a different form from language to language. (Examples: Hindi-Urdu ($X = v$) *caay* 'tea': *caay vaay* 'tea and/or anything like that', Marathi ($X = bi$) *pustak* 'books' - *pustak-bistak* 'books etc.', Tamil ($X = ki$) *kaappi-kippi* 'coffee or anything'.

(4) *postpositions*: though this feature is not limited to South Asia (see Masica, in this volume), and can be shown to have a certain basis in OIA (Emeneau 1956:9), certain aspects of their development suggest Dravidian models, at least in some cases (see part 5 below.)

Many can be traced back to IA etyma (e. g. Hindi-Urdu *pass* 'near, accessible' \rightarrow Skt. *paarśve* 'at the side'), but others are problematic, for example the genitives (Hindi-Urdu *kaa/kii*, Panjabi *daa/dii*, Gujarati *naa/nii*, Marathi *caa/cii/cee*, Bengali (*e*)r etc.). The possibility of verbal origin (e. g. Skt. *raamaaya ditah* 'given to Ram' \rightarrow Pkt. **raamaa diya* \rightarrow Panjabi *raam daa* 'Ram's') can be linked both with a favorite Dravidian relative clause construction (cf. Tamil *naalekki vanta payyan* "tomorrow coming boy" = 'the boy who is coming tomorrow'), and specific Dravidian verbal formations (such as Tamil *raaman oṭiya* 'Raman's' - cf. the obsolete Tamil verb *uṭaiya* 'to own'). Such an origin might possibly also explain the fact that, while the various IA postpositions are syntactically and semantically equivalent from one language to another, they are often not cognate as in this case (Southworth 1971 : 263-4).

(5) *numeral classifier systems*: Emeneau (1956: 10-15) has presented data on the existence of numeral classifiers in languages of the IA, Drav., and Munda families, primarily in the eastern end of the subcontinent. See the discussion in section 4 below:

(6) *loss of gender distinctions in IA*: the three-gender system of OIA, inherited from PIE, was reduced to two genders in central IA, and lost altogether in eastern IA (interestingly enough, in just those areas where numeral classifier systems have developed see part 3 below). The retention of three genders in the western languages has been considered a possible indication of Dravidian

influence, since Dr. languages generally have a 3 way gender contrast as indicated by pronouns and personal endings in the verb (though divided on a "natural" basis).

(7) *verbal operators*: these modal-like verbs generally occur at the end of a verbal sequence, in IA, Drav. and Munda languages (cf. Masica, this volume, section 3B): compare Hindi-Urdu *jaa sakegaa* 'go he-will-be-able' = 'he will be able to go', Tamil *pooha mutiyum* 'go is possible' = 'can go, may go'. This fact is not in itself evidence of any unusual convergence, but the syntactic and semantic resemblances found, even among non-contiguous languages such as Tamil and Hindi-Urdu, are often very striking. Two examples can be mentioned here:

(7a) *negative verbs*. Negative modals, a common and old feature of Dravidian languages, have a variety of surface forms (e. g. Tamil *maatt-* 'will not', *kuutaa-* 'should not', *ille* 'is not', *venṭaam* 'not wanted'), and lack a common negative morph. IA languages make use of a negative element derived from Skt. *na* in combinations like *na-bhavati* (e. g. Marathi *navhe* 'is not') or *bhavati-na* (e. g. Nepali *hoina* 'isnot'), but following Dravidian syntactic patterns. In some cases (e.g. in Marathi), one finds whole sets of negative auxiliaries on the Dravidian pattern (Southworth 1971:264).

(7b) "*compound verbs*" This term is sometimes applied to verb sequences involving semantically opaque verbal operators, whose semantic contribution to the context is often difficult to describe, and often differs unpredictably from the meaning of the same word when used as a main verb. Yet it is not unusual to find the same constellation of meanings in languages of different families. For example Hindi-Urdu *rakhnaa* 'to put' translates Tamil *veccu* 'put' both as a main verb and in expressions like Hindi-Urdu *kah-rakho* 'tell once and for all' (literally "tell and put" = Tamil *coll-i-veccu*).

(8) *causatives*. Emeneau (1971:38-42) suggests that the history of causative formation in IA "allows of an easy possibility of early Dravidian influence", though other alternative explanations may also be possible (41). Whatever the ultimate source of these formations, it is clear that IA used its own resources to provide the surface morphs used.

(9) *gerund construction* (see Emeneau 1956, Kuiper 1967). As Kuiper (1967:95-6) has pointed out, this clearly Dravidian (and Munda) pattern, which appears in the Rigveda, uses archaic IA

morphological material. The quotative use of *iti*, also discussed by Kuiper (1967:91-5), derives from this same construction (see below for an example from the modern languages).

(10) *Word order* (see Masica, this volume). As has often been pointed out, many cases can be found of whole sentences which are translatable word for word, even morpheme for morpheme, from one South Asian language to another. Following is an example of such a sentence from Tamil and Marathi (This sentence also illustrates the quotative gerund construction mentioned in (6) above):

TAMIL :	(1) nii-ñka	(2) i-nte	(3) uur-ukku
MARATHI :	tu-mhi	h-yaa	gaavaa-t
ENGLISH :	you-Plur	this-demon-	
		strative	town-to/in
T :	(4) vaR-at-ukku	(5) minne	(6) e-nte
M :	ye-ñyaa-cyaa	agodar,	koñ-tya
E :	come-nomina-	before	which
	lizer to/of		demonstra-
			tive
T :	(7) uur-le	(8) iru-nt-e	(9) enñ-i
M :	gaavaa-t	ho-t-aa	mhañ-uun
E :	town-in	be-past-PE	say-absolutive
T :	(10) co-nn-ii-ñke		
M :	saang-itl-e		
E :	tell-past-PE (T : Plur.)		

‘Before coming to this village (or town), which village did you say you were (living) in?’

The order of morphemes is identical in the the two sentences (except for the occurrence of a final Plural marker in Tamil). The only other differences are in the selection of postpositions in items 3 and 4, and in the grammatical rules affecting the agreement of personal endings (PE) in item 10. These two languages not belong to different stocks (Dravidian and IA, respectively), but are spoken in non-adjacent regions.

(11) *Semantic convergence*. Many examples might be listed (see Southworth 1971:265-7) and further research is needed into the history of these examples. The following case is provided as an illustration. Marathi and Gujarathi both have a distinction between the exclusive and inclusive (first-person plural pronouns (e.g. Marathi *aahmii* exclusive, *aapañ* inclusive). This is a pan-Dravidian feature, but is not found in early IA. (This is mentioned as a feature of Maharashtrian Hindi by Apte:see his paper in this

volume.) Here again, the morphological material is IA: Marathi *aamhii* can be related to the Skt. pronoun *asmaakam*, and *aapaṇ* to Skt. *aatman* 'self'.

4. Dialect divergence and substratum influence

The inscriptions of Ashoka, the earliest documents in Indo-Aryan, can be divided dialectally into two groups. Jules Bloch (1950:44) divides them into an eastern or Gangetic group and a western group, as shown in figure 2. The western group includes the inscriptions of Girnar (Kathiawar) and the fragment at Sopara in western India, as well as the northwestern inscriptions of Shahbazgarhi and Mansehra, which are written in a distinctive script. There are also differences between the west and the northwest, but these appear to be less pronounced and less systematic than those which distinguish these from the eastern group. The latter includes all the rest of the inscriptions, ranging from Topra (near modern Delhi) to Dhauli and Jaugada on the east coast, to the south (modern Mysore). This group shows remarkable uniformity, in spite

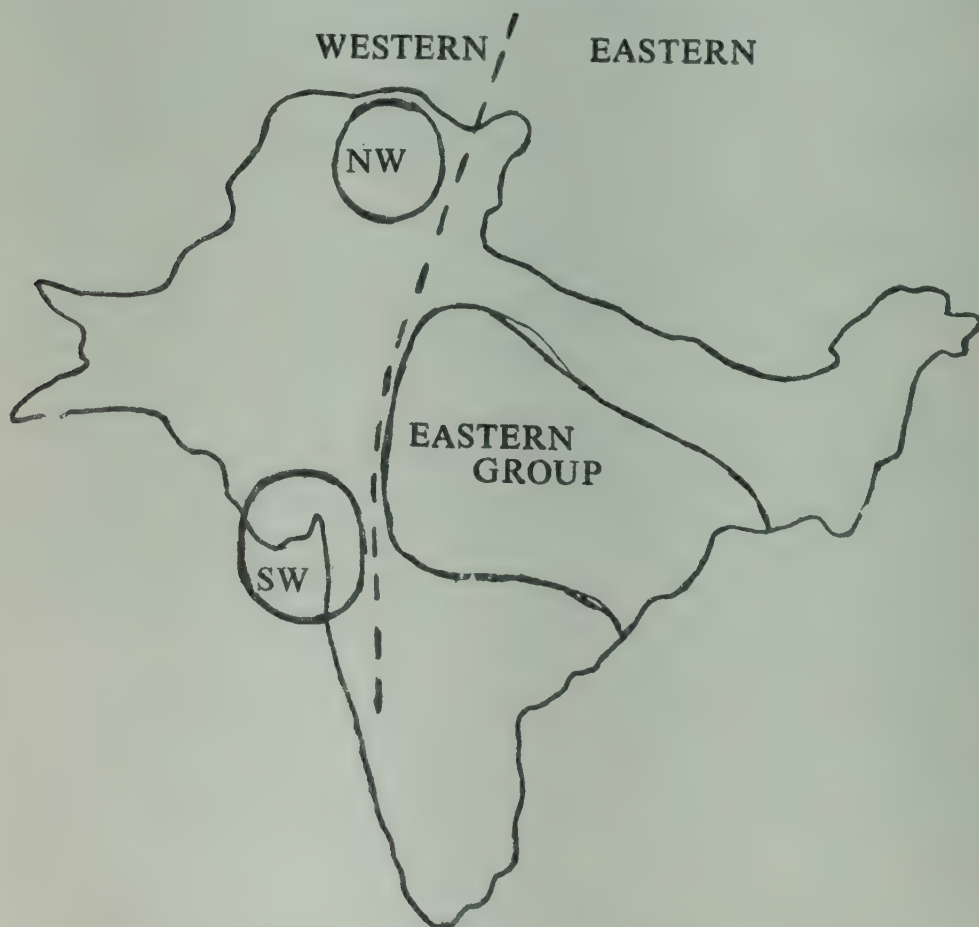


Figure 2: Dialect divisions of the Ashokan inscriptions, third century B. C. (see Bloch 1950)

of some slight variations. (For example, OIA *r* generally appears as *l* in the Eastern inscriptions, but there is some fluctuation between *r* and *l* in some locations in Central India.)

According to Bloch, the reason for the overall unity of the eastern group is that ".....le bassin du Gange entier, de la montagne et du Pendjab au delta, a ete submerge par la conquete magadhienne..." (1950:85). Ashoka's capital at Pataliputra was the center of the ancient Magadha, and the language of the eastern inscriptions is "le prototype de la m \ddot{a} gadh \bar{i} du drame classique" (1950:86). Thus the occurrence of these Magadhan forms in inscriptions farther to the west is difficult to interpret: we cannot be sure whether Magadhan features (such as *l* for older *r*, etc.) were characteristic of the local speech, or whether the Magadhan forms were considered to be the "standard" form of language to be used in the areas under the domination of Pataliputra.

A full study of the history of dialect differentiation in IA remains to be done. Here I will limit myself to discussing two regional differences which have already been studied in some detail: the retroflex-dental distinction in phonology, and the numeral classifier systems discussed by Emeneau (1956:11-15). I believe that a close examination of the distribution of these two features indicates that the dialect division noted by Bloch for the inscriptions of the third century B. C. goes back to the origins of IA speech in India, and can be tentatively related to the presence of two distinct linguistic substrata in the period prior to the arrival of IA speakers. (The implications of the term "substratum" will be discussed in detail in section 5 below).

Comparing the modern situation in IA with that of the Ashokan period, we find that some of the dialect differences noted by Bloch have either disappeared or become much less prominent. The merger of *r* and *l*, for example, is not characteristic of the contemporary eastern languages, and other differences have been obscured by later phonological and morphological changes (such as the loss of final vowels, which has almost wiped out the difference between final *-e* and *-o*, so prominent in the Ashokan inscriptions). On the other hand, the absence of the distinction between \underline{n} and \bar{n} (as also that between *l* and \bar{l}), precisely in the languages and dialects of the Ganges system, still indicates, as it did in Ashoka's time, that the Gangetic area is linguistically distinct from the rest of IA.

Another fact, which has not been noted before, is that the text frequency of all retroflex consonants, relative to that of the corresponding dentals, is lower in the Gangetic region than elsewhere

in IA languages. In contemporary colloquial texts, the western IA languages (Marathi, Gujarati, western Panjabi) show dental/retroflex frequency ratios ranging between 2.0 and 4.4. This can be compared with those for the major Dravidian languages, which range from 2.0 to 3.9. Specimens of Western Hindi-Urdu, on the other hand, show a ratio running from 8.0 to 11.7, and Bengali goes up at least to 15.7. In Assamese, as noted above, the distinction is lacking (see figure 3).³

The agreement between Western Indo-Aryan and Dravidian in the relative frequencies of retroflex and dental consonants is striking, and suggests that, if we are willing to think in terms of substratum influence, the possibility of a Dravidian substratum in the west (in the present Marathi, Gujarati, and Western Panjabi speaking areas) must be considered. If we then make the assumption that the western area mentioned was originally inhabited by speakers of a Drav. language (or Drav. languages), whose speech influenced the local IA which entered this area, how do we account for the

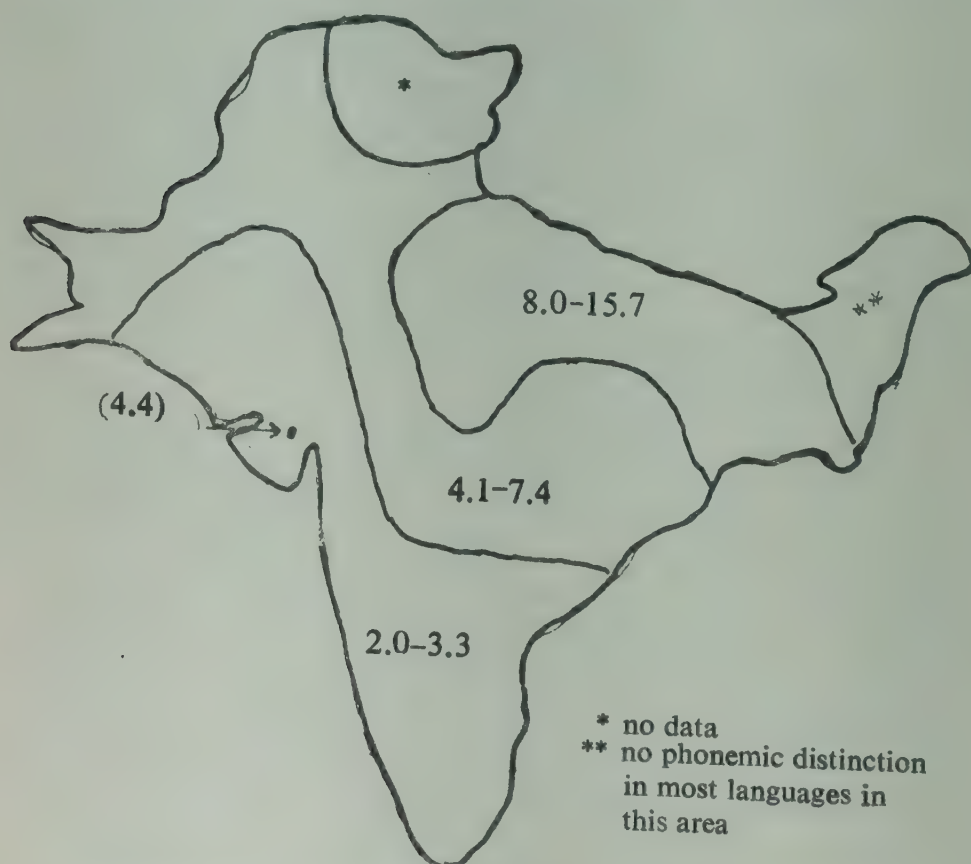


Figure 3: Text frequency ratios of dental/alveolar consonants to retroflex consonants in major Dravidian and Indo-Aryan languages.

progressive loss of this contrast as we move eastward? At the very least, we would have to assume that in the lands served by the Ganges system, there were no speakers (or fewer speakers) of the language(s) spoken in the west and north west. We would also have to consider the possibility that there were other languages spoken in this area, which lacked the retroflex-dental contrast.

Other evidence suggests that the latter alternative must probably be accepted in any case. The distribution of numeral classifier systems, discussed in detail by Emeneau (1956:11-16), makes it clear that these must have come from an eastern source. These classifier systems are in any case a typical feature of those languages spoken to the east of the subcontinent (Chinese, Southeast Asia). A number of languages of the northeast area, regardless of language family, have well developed classifier systems (e.g. Garo, Khasi, Bishnupriya etc.) As Emeneau points out, the IA languages of this area (the "Magadhan" languages Bengali, Assamese, Oriya, Maithili and also Nepali) have classifier systems. This feature of the eastern languages had already been mentioned by Jules Bloch (1934), and Emeneau cites S. K. Chatterji's opinion that "the modern systems are all descendants of a system that originated in the Magadhan Apabhramsa at the end of the Middle Indo-Aryan period" (Emeneau 1956:11). The feature also appears in several non-IA languages of the central or eastern region, though in many cases the actual classifier morphemes seem to have been borrowed from the neighboring IA languages. In addition, fragments suggestive of classifiers appear in Marathi, Telugu, Kannada and Tamil.

Looking at the concentric lines in figure 4, this feature might be said to radiate from the northeast. We may also notice that this feature is in a sense in complementary distribution with gender in the Indo Aryan languages (see figure 5). Those without classifier systems, or with only meager suggestions of such systems, have retained the OIA gender distinction, at least to some extent, and those farthest from the northeast (Marathi, Gujarati, and Western Panjabi, Sindhi) have retained the three gender system, while those in the intermediate range (Hindi, Bhojpuri) have lost the neuter gender, and those in the core area (Bengali, etc.) have lost gender distinctions entirely.

Though the retroflex-dental distinction and the numeral classifiers are features of completely different types, the complementary nature of their geographical distribution is quite striking. It seems not too far-fetched to suggest that, though substratum

influence made itself felt in much the same way all over the subcontinent, we have to reckon with at least two focal areas of such influence. One apparently extends from the Indus basin to modern Maharashtra and Gujarat, coinciding to a large extent with the known area of the Indus Valley civilization (see figure 1).⁴ The other is located in the northeastern part of the subcontinent (Bengal, Assam, Bangla Desh), centering on the Ganges delta. We should not fail to notice also the correlation between these two regions and the division between the eastern and western watershed.



Figure 4: Classifier systems in South Asian languages. According to Emeneau 1956, the eastern area has well-developed classifier systems, the central area has "meager suggestions", and the western area has no reported use of classifiers.)

As to the linguistic components of these substrata, the western one probably contained a prominent Dravidian element—given that Dravidian is the only family which can be safely regarded as having the retroflex/dental distinction originally. The eastern substratum, characterized by classifier systems, absence of the dental-retroflex contrast, and (atleast at an earlier period) the loss of the distinction between *r* and *l*, is clearly linked to languages of the Tibeto-Burman (or Sino-Tibetan group).

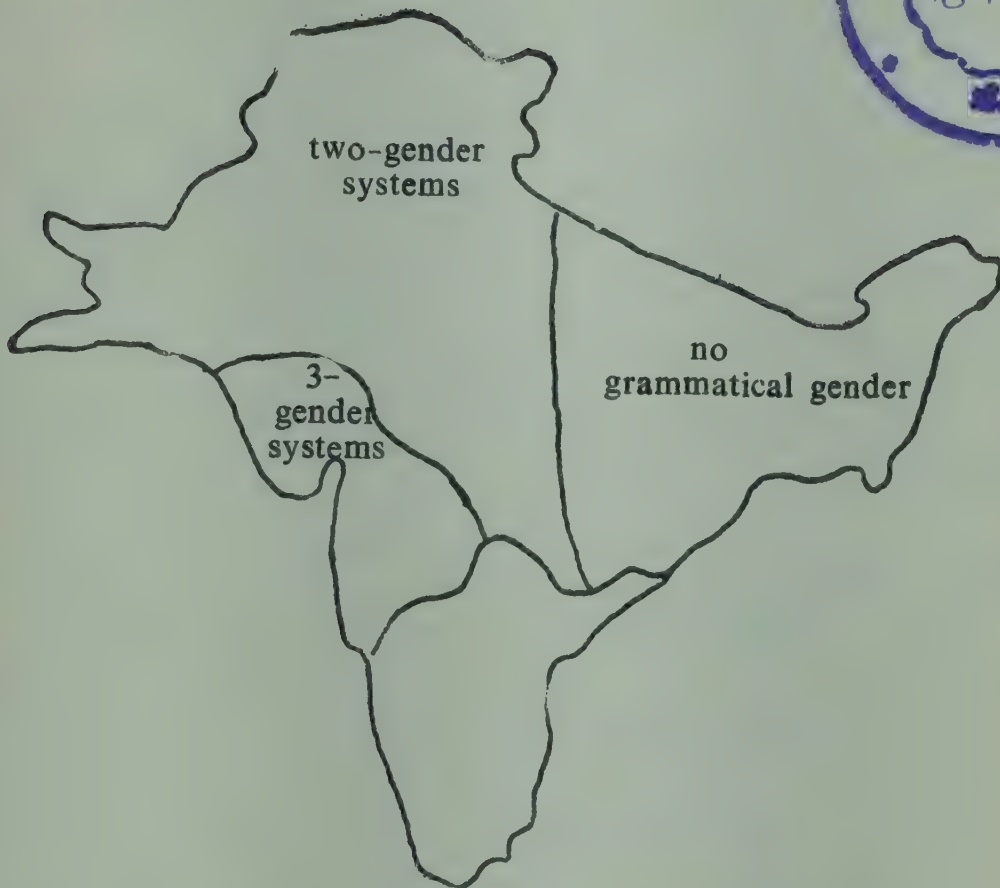
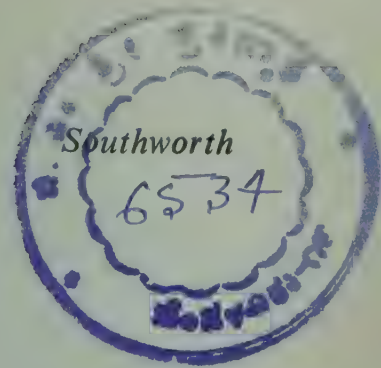


Figure 5: Gender systems in Indo-Aryan languages (see text).

It is possible to see a sequential development here, and to suggest that the presence of retroflexion in the western IA languages dates back to the earliest period of contact between IA and indigenous (Dravidian and possibly other) languages in the north-west, with gradual movement southward, perhaps initially along the coast.⁵ The influence of the eastern substratum might then date from a later period of contact, between a linguistic substratum consisting primarily of Sino-Tibetan elements and a language which could be best described as an IA-Drav. hybrid, which has developed during a period (probably of several centuries) in the northwest. Evaluating such a hypothesis is problematic, and it is given here only as a suggestion which needs to be considered along with other possibilities, when a full historical study of the distribution of features in IA is made.⁶

5. What really happened ?

In attempting to answer the question posed at the beginning of this paper, we may note first of all the general similarity between what happened to the original Indo-Aryan language in India, and what happened to various European languages in the process of

creating pidgin and creole languages (see Southworth 1971, and other papers in Hymes 1971). In all of these situations, a small but dominant minority imposed its language on a large (and in some cases, linguistically heterogeneous) population. The resulting language was in each case identifiable by its surface features as "descended" from the dominant language, while exhibiting massive and rapid changes in its phonology, morphology, syntax, and semantics. This process has been explained as the result of the disparity in the size of the groups, the lack of social solidarity, and the limited types of contact between the dominant group and the local population (mostly limited to work and trading situations), all of which contributed to the imperfect transmission of the dominant language.

This suggests a slow, gradual process of convergence. An alternative explanation suggests that there may have been a pre-existing lingua franca in use among the (linguistically heterogeneous) dominated group, and that this language was relexified by taking over most of the vocabulary of the dominant language (See De camp's Introduction in Hymes (1971). In this case, the change may have taken place in a single generation. (The original lingua franca may have come into being by a process like that described above.) We cannot be sure which (if either) of these happened in the present case, though it is clearly possible that one or the other or both may have happened in different areas.

There are however clear differences between the classic pidgin situation and that of the IA languages. There is evidence (see below) that different segments of the indigenous population had different kinds and degrees of contact with the IA-speaking introders. Thus, there must have been a variety of different modifications of IA growing out of these contacts, differentiated according to the extent of closeness between the IA speakers and others. In some cases, contact may not have been direct, but mediated by other groups. Perhaps a more appropriate modern parallel for this kind of situation can be found in Indian English than in the pidgin languages. In present-day South Asia, one encounters varieties of English ranging from the impeccable Queen's English of the All-India Radio news broadcasters, to the rough-and-ready jargon of taxi-drivers. In between, there is a wide range, including formal varieties which differ mainly in phonetics from international varieties of English, and varieties found in informal conversation which seem quite deviant to speakers of English from elsewhere. Some examples follow (see footnote 1):

(1) informal spoken usage of educated speakers :

(a) missing articles :

Nearest farm is at Kanchipuram
It will have very good future.

(b) word order :

Anybody is paying for all this?
What he wants?
Why he is doing like that?
By train if you go.....

(c) Object deletion :

If you need a place to stay, we can arrange (it).
We are also liking very much.
They will not take (rice) at lunch time.

(d) "impersonal" constructions :

That letter got me on 10th
Water is not obtaining sufficiently here.

(e) tense, aspect, etc.:

I am telling them like that for past so many days.
(= I have been telling...)
He is having very good salary. (= He has...)

(f) *V and V* (equivalent of the gerund construction, see section 3, item 6) :

I'll just eat and come. (=I'll come after eating.)
Buy the vegetables and come. (=Go and buy vegetables.)
You take the book and go. (= Take the book with you.)
He did not ask me and go.(=He went without asking me.)

(g) miscellaneous :

Money is not there. (= There is no money)
You spoke to the director itself? (= himself, personally)
Will there be an interpreter for you? (= Will you have...)
You have already read this book, isn't it? (...haven't you?)
It was established before 55 years. (= 55 years ago)

(2) examples of uneducated usage :

Madam, ten paisa give.

There two peoples breakfast eating.

Triplicane going, that bus take. (= Take the bus going to T.)

For me some family man that place. (=I have some relatives there)

He's afraid of you. (= He is afraid of you.)

Coffee is bringing, sir. (= Someone is bringing...)

I am very boring. (=I am getting bored.)

Though there are obvious differences (see below) between the situation of the British in India and that of the original IA speakers, there is evidence to indicate that this type of linguistic variability, resulting from different kinds of social contact, did exist in Vedic times. Kuiper's evidence (see his paper in this volume) points to an early stage of convergence which is less extreme than that observed later, and which suggests social integration at the highest social levels. It is difficult to see how non-IA features could appear in the ritual language of that period, unless original speakers of non-IA languages or their descendants were included among the participants in rituals (and perhaps even among the composers of the hymns themselves). This implies close social contact, though not necessarily total social equality, between IA speakers and some IL (indigenous language) speakers.

The exact nature of this contact cannot be specified though various possibilities exist. It is possible for example that IA-speaking males took IL-speaking concubines (or "second wives"), in a manner similar to that of the Nambudiris and Nairs of Kerala (see Mencher and Goldberg 1967). The children of such unions would then be exposed to both languages. However this may have been, it is likely to have been primarily the indigenous upper class which was involved.

The changes mentioned by Kuiper are relatively minor, and thus may have involved a fairly small group of IL speakers in the initial stage, and possibly a fairly restricted geographical area. The sweeping changes described in section 3 above, however, require different circumstances. In order to explain these, we must assume that IA spread to other social groups, and to other regions, under circumstances allowing much less accurate transmission, making greater convergence inevitable. We cannot specify what these circumstances were, but they are likely to have included military operations, trade, and situations involving intermediaries (such as overseers) who served to transmit variant forms of the language in limited contact situations. This process can be expected to lead to the type of "linguistic continuum" described by De Camp for Jamaican English (De Camp 1971), in which one can rank varieties according to their linguistic distance from a "standard" form. That Indian English does not exhibit such a continuum, but a rather sharp division between educated and uneducated speakers, is no doubt due to the presence of a well organized elite education system, manned originally by English school masters. The existence of this institution probably also explains why Indian English is not more deviant than it is.

Though the early IA speakers had parallel educational devices (the tradition of Vedic recitation, and the tradition of Sanskrit grammarians made famous by Panini), these were never meant for any but a very small elite group. And the original IA speakers did not have a substantial body of written literature, nor did they have the institution of home leave, to help anchor their language to an immutable standard. Though the grammatical tradition may have been instituted partly out of an awareness that the language was "degenerating", it could hardly have done more than slow the process down. (We may note, in this context, that the detailed and painstaking grammar of Panini dealt only with phonology and morphology, and did not codify syntax or semantics, which are much less subject to conscious manipulation.)

The situation which we observe today in Indo-Aryan seems to be the result of a long period of accommodation between the extremes of the original continuum – the slightly deviant IA of the upper class, and the pidginized variants of the lower. In this connection, it has been pointed out that the "standard" Marathi of the higher castes shows less influence of Dravidian than lower-caste Marathi (see Southworth 1971:262). As further data becomes available on social variation within IA languages, we can expect more light on this subject. The mechanism for this process of accommodation is probably to be found in the interaction of social groups such as that required by traditional agricultural operations at the village level. These operations appear to involve a minimum of three groups (landowners, intermediaries such as tenants or managers, and labourers), with very limited contact between members of the highest and lowest groups. Thus, intermediate groups would be affected by contact with both extremes. Since village organization exhibits a remarkable uniformity all over the subcontinent, this mechanism would explain how a similar process took place throughout the present IA speech area, though with local variations in the outcome. These variations depend on the nature of the original substratum language (see section 4 above), and perhaps also on the distance from the original area of settlement. Thus, both Marathi and Bengali show a greater replacement of IA features with Non-IA features than do western Hindi-Urdu or Panjabi.

Some evidence is available to suggest that this process of convergence, which has been described here from a hypothetical point of view, has been in operation until fairly recent times. In Kupwar, a village in Maharashtra near the Karnataka (Mysore) border, Gumperz & Wilson (1971) found that most of the village

men control two or more of the local languages. Most of the village landowners are Jains who speak Kannada at home, but use Marathi (occasionally Urdu) in addressing members of other groups, for example laborers or members of service castes. Muslim landowners use Urdu at home. Groups of Jain men were observed switching freely between Kannada and Marathi in conversation among themselves. The local varieties of the three languages show such a high degree of structural convergence that Gumperz & Wilson (1971:165) were led to postulate a single underlying structure for all three, with alternative sets of rules for converting between underlying categories and surface form (see the quote in section (1) of the introduction to this volume.)

It is possible that the state of affairs existing in Kupwar, in the multilingual belt which marks the boundary between IA and Dravidian languages, represents the last stage of the process of convergence we have been discussing. In other words, it is hypothesized that the Kupwar situation, which Gumperz & Wilson view as a border phenomenon, may be a manifestation of a gradually *moving* boundary.⁷ This would imply that the process of convergence between IA and Dravidian has been continuing from the earliest period of contact, and that during that time the boundary between the two has gradually been moving southward. This southward movement implies the progressive extension of the domination of Indo-Aryan southward, or in this particular case, the progressive extension of Marathi as the accepted prestige language of the area.

Such a hypothesis can be verified by examining the situation in other parts of the bilingual area, as well as in nearby parts of the area considered to be "solidly Marathi-speaking." The author knows of Maharashtrian Brahmin families, living in regions further north (e. g. the Sholapur area), which include Kannada-Marathi bilinguals. Such cases could be a residue of an earlier stage of bilingualism existing further north. Another important piece of evidence would be the presence (or absence) of greater "Dravidianization" in certain social dialects of Marathi in areas where no Dravidian language is currently spoken. Such evidence, which has been suggested above but which needs greater confirmation, would lead to the hypothesis that those with more Dravidian features in their speech had originally been Dravidian speakers, and had later replaced their home language by Marathi.

Gumperz and Wilson, on the other hand, have emphasized the tenaciousness of the home language, stating that language is an important factor in the maintenance of "ethnic separateness of home

life" (1971:155-156— see section (3) of the Introduction to this volume for the full quotation). As has been suggested in the Introduction to this volume for the full quotation). As has been suggested in the Introduction, an alternative explanation is available for the maintenance of distinct home languages by groups like those described by Gumperz and Wilson. It seems equally probable that the use of language as a means of maintaining ethnic separateness is primarily characteristic of small groups with something to gain from remaining distinct, or something to loose from merging with groups with which they otherwise have a great deal in common. Thus I would suggest that, even in the South Asian context, it is the special process of maintenance of a distinct home language which require explanation. This seems to fit with what we know from elsewhere and may be considered a reasonable extrapolation of Hymes' remarks: "it is not the mixing of traditions, but the maintenance of boundaries between them that requires explanation" (Hymes 1971:66; cf. also note 2 on p. 85). Thus the gradual dropping of one's home language, when its retention is not motivated by prestige (or by some other tendency toward exclusion or exclusiveness), is what is naturally to be expected.

Generally speaking, a prestige language will expand in terms of the contexts in which it is considered appropriate. Economic necessity, and the need for a lingua franca for communication in multilingual settlements, can reinforce the prestige factor. (This has been the history of English, and earlier Hindustani-Urdu, in South Asia.) It seems likely that the process of *sanskritization* described by M. N. Srinivas is one of the keys to this process (Srinivas 1962). Just as certain groups which were originally low in the traditional caste hierarchy have attempted to raise their status by adopting high-caste customs like vegetarianism, the taboo on widow remarriage, and other customs of dress, ritual, or eating habits, in the same way many Dravidian-speaking groups may have adopted the local version of IA as their home language. This would be especially true of groups who moved into the IA area from outside in times of famine or disaster, thus becoming isolated from their original language group. (A reading of Enthoven 1920 indicates that this kind of movement has been extremely frequent) As Gumperz and Wilson suggest, language differences in a situation like that described for Kupwar function very much like differences in dress, and while such differences have symbolic value in many contexts, there is no reason to expect them to survive in situations where they serve no positive function.

(6) Conclusions

The title of this paper suggests an attempt to peel off the most clearly visible layers of linguistic data, in order to get a view of earlier stages which are less clearly discernible. The results hopefully apply both to linguistic and non-linguistic history, since linguistic processes need social processes to impel them. Here I summarize briefly the historical possibilities derived from the above consideration of linguistic data.

The evidence seems sufficient to postulate that at some point the early IA speakers constituted a small but dominant minority in a limited area of the northwestern part of the subcontinent. They were probably integrated gradually into the existing social structure, primarily (if not exclusively) at the top levels. Subsequently, a much-modified form of the original IA language became the prestige language of the northwest, spreading gradually southward and eastward as a military and trade language.⁸ While the population in the western areas (present-day Maharashtra, Gujarat, Sindh) was probably, mainly Dravidian-speaking, in the Gangetic plain (especially from eastern Bihar eastward) the IA language was taken up by a predominantly Tibeto-Burman-speaking population. At some point, intellectuals in the upper strata probably became aware of the drastic changes which the language was undergoing, and founded the science of grammar partly to prevent further decay. It is conceivable that this development coincided with the move into the Gangetic region. All of this must have happened before the third century B. C., when we have the evidence of the Ashokan inscriptions (see Bloch 1950; also section 4 above) to tell us of the extent of the differences between literary Sanskrit and the contemporary administrative language.

The subsequent linguistic history suggests the establishment of political units dominated by IA-speaking elite minorities throughout the present area of IA speech, followed by gradual adoption of the local IA variety by non-IA speakers. This development may have been preceded and accompanied, in each area, by a process of internal convergence between the relatively conservative form of IA spoken by the elite group, and the highly pidginized variety adopted originally by the non-IA speakers. The differences in the local outcome of this linguistic convergence process probably depended on such factors as the relative size of the different components of the population and the extent of movement between one area and others.

NOTES

1. From materials collected for a study of "South Asian Semantic Structures" supported by the National Science Foundation through the University of Pennsylvania (GS-2838).
2. Maxine Berntsen points out that in the area of Maharashtra she investigated, the \underline{n} - η contrast is lost in uneducated speech. It is clearly an old feature of the language, however, appearing in 10th-century texts, and persists in the more conservative elite forms of Marathi. The distinction has clearly been reinstated recently in literary Hindi, and is still observed only by a minority of speakers.
3. Sources for these frequency counts includes colloquial language manuals and the texts given in Grierson, LSI, for the Hindi-Urdu area.
4. Recent newspaper reports (Indian Express, 23 July 1973) speak of a probable site very near to modern Delhi, though no scholarly reports have yet appeared to confirm this.
5. The possibility that this was a predominantly rice-eating area in the early period is discussed in Fairervis 1967. Cf. the discussion of the terms for 'rice' in the first paragraph of section (3) above.
6. However, some comment is needed on Emeneau's remarks about causatives (1971b:38-42), and how they may bear on this suggestion. The list of IA languages which share the "double causative" construction includes Bihari, eastern Hindi, western Hindi, Panjabi, Rajasthani-Gujarati, and (sporadically) Asamese. Bengali-Oriya and Marathi are excluded. On the basis of this distribution, Emeneau concludes (41): "... the restriction on the distribution of the more complex later system to exclude the marginal languages Marathi and Bengali-Oriya, of which Marathi and Oriya are in modern contact with Dr., should require all Dr. influence in this trait to be early." He suggests as an alternative that the resemblance between the IA and Dravidian systems may be independent.

We are in no way close to the resolution of such questions, but I would simply point out that the hypothesis I have suggested would require that the resemblances in the causative construction among the languages mentioned developed at a later, rather than an earlier, period in the history of IA, diffusing probably from a central area *after* the movement from the Indus Valley toward the Gangetic area.
7. These remarks apply only to the Kannada and Marathi speech in the area. The Urdu speakers appear to be much later arrivals, and in any case several of the features of the local Urdu are also found in "lingua franca Hindi" (cf. APTE).
8. This hypothetical pidgin could conceivably have arisen through relexification of a prior lingua franca (see section (5) of the Introduction).

MORPHOLOGICAL COEXISTENCE :

A KEY TO LINGUISTIC CONVERGENCE¹

Helen E. Ullrich-Baylis

The prescriptive use of different varieties of one language according to the social situation has been termed diglossia by Ferguson (1959). This is a phenomenon common in India. In the area of Mysore State where I did field work, the Havik Brahmins used three different varieties of Kannada—their caste dialect, the standard colloquial dialect, and literary Kannada. The caste dialect, Havyaka Kannada, (HK) is used among caste members, Standard colloquial Kannada (CK) is used when conversing with non-villagers, and the literary dialect (LK) is used by the educated in formal situations such as political speeches and correspondence. The context for each dialect is so well defined that inappropriate use draws comment. Nevertheless, a close examination of texts reveals a low frequency, apparently random, mixture of forms from LK and CK in HK.

Although diglossia is generally a stable phenomenon, there are trends which may upset the equilibrium. A significant increase in literacy, extended communication among different segments of the speech community, and the development of a national language² (Ferguson 1959:438) are threats to a diglossia situation. If, as a result of these trends, diglossia ceases, there is an option as to which dialect may evolve for general use—the dialect appropriate to formal situations, the one appropriate to informal situations, or a mixture of the two. The purpose of this paper is to examine coexistence in one of the dialects in a diglossia situation in which trends threatening its stability are present.

Conditions which threaten the retention of a diglossia situation are present in Totagadde². Literacy has increased. In the village Totagadde all of the younger Haviks are literate, whereas it is not at all uncommon to find older men and middle-aged women who are

illiterate. Education is now accessible to all in the village. The village school, open to members of all castes, is just one place where there is increased opportunity for communication among segments of the population which previously rarely interacted. Economic necessity and educational opportunity have further increased communication among different groups. Although Haviks prefer to remain landlords, large families and small holdings force them into other occupations such as banking, law, business, trucking, hotelry. In none of these occupations is the caste dialect functional. A knowledge of colloquial Kannaḍa is a prerequisite for interacting with non-villagers and non-Haviks. A knowledge of the literary language is a prerequisite for higher education.

In the period when Haviks interacted primarily with other Haviks facility in the colloquial and literary dialects was not so important. The ritual purity which the Haviks observed effectively limited intercaste interaction. A caste dialect spoken only with caste members does not severely limit one's world when one's primary frame of reference is with kinsmen. Increased communication with members of other castes and educational opportunities have lowered the functional load of Havyaka. The problem of a national language has reached Totagadde (see Ullrich 1969). But the problem of a national language for a Kannaḍa speaker is a cross-language problem, not a diglossia problem (Ferguson 1959:436). An increase in literacy and extra-caste communication exists in Totagadde and may well be causal factors for occurrences of aspects of CK and LK in HK.

Convergence of dialects does not occur in a stable situation of diglossia. Consequently, the presence of coexistent morphological forms in one of the dialects implies that diglossia is being broken down and a merging of the dialects may take place. The assumption made here is that the use of coexistent forms in the caste dialect indicates convergence of the caste dialect, here Havyaka Kannaḍa, with the standard colloquial dialect. In place of three dialects—the caste dialect, the standard colloquial dialect, and the literary dialect, the Haviks may eventually have one dialect for dealing with caste and non-caste members in all but the most formal situations where the literary dialect will continue to be used.

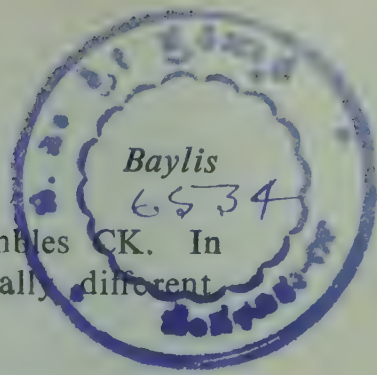
The first time a Havik child is confronted with the necessity of handling another dialect is when he enters school. At that time much dialectal interference occurs. In a Havik situation he may be heard to say *na:nu ho:gte:ne* 'I go' sporadically substituted for the HK *a:nu ho:gti*, as well as the blend *na:nu ho:gti*. During this period of confusion, Haviks continue using HK to the children.

Eventually the child learns to distinguish the appropriate forms for different situations.

The dialectal confusion exhibited by the child who has just entered school is one form of coexistence which may be found among adults. However, the predominant areas of convergences are those where HK and CK categorize the universe differently. The most obvious examples are in the realm of the pronoun. HK has an inclusive and exclusive first person plural. CK does not distinguish these. In HK, except with reference to certain kinsmen, the second plural does not have a dimension of respect. In CK *ni:vu* may indicate respect as well as plurality. In HK the neuter and feminine referents belong to the same pronominal category; in CK, there are separate pronominal categories for neuter and feminine referents. The recognition of the conflict in the pronominal system is widespread. Verbalization about the inclusive and exclusive first person plural and about the use of *ni:nu* 'you (singular)' in cases where CK would use *ni:vu* for respect is common. However, if confronted with the comment that the neuter and feminine referents fall together into one pronominal category, a Havik would tend to deny it. This may be a reflection of a deeper semantic level in which feminine and neuter are separate. (Neuter nouns which have female referents take an animate plural, which is not the case with other neuter nouns). Another possible interpretation is an embarrassment caused by a Havik feeling that this reflects (or could be considered by others to reflect) lower stats of women among Haviks. See below for further discussion of pronominal differences and convergence.

CK forms appear to occur sporadically throughout the various types of texts. An examination of different kinds of oral texts—conversation, folk tales, Great Tradition tales—did not reveal much difference³ in the level of convergence. Both the amount and the patterning of convergence are idiosyncratic, factors which lend support to the hypothesis that HK provides an example of convergence in its initial stage.

Of the six nominal cases in Northern HK nominative, accusative, possessive, locative, dative, and instrumental, the locative is the form most different from CK. (See Table 1.) However, the CK form *-lli* or *-li* occurs about as frequently in Havyaka speech as the Havyaka locative *-age*. Both the Northern HK locative case *-age* and the CK form *-lli* occur widely, without pattern, and about equal in usage, except in the case of one informant who used the *-lli* form only with items borrowed from English.



The remainder of the case system closely resembles CK. In the one case, i.e., the locative, where the suffix is radically different

TABLE I

Havyaka Kannḍa, Colloquial Kannḍa, and Literary Kannḍa
Case System

	<i>Havyaka Kannḍa</i>	<i>Colloquial Kannḍa</i>	<i>Literary Kannḍa</i>
Nominative ⁴	V ⁵	V	V
Dative	-ge, -kke for the -a inanimate class	Age, -ge	-ge, -ke
Accusative	-nna	ṽna, ϕ for inanimates	-nnu
Locative	-age	-li	-alli
Instrumental	-inda	-inda	-inda
Possessive	-a	-a	-a

there is almost free variation between the forms. The borrowing of a suffix where HK has no overt suffix, e. g. the accusative of neuter nouns, is much less common, although sporadic occurrence may spread. The replacement of a suffix seems to take place more easily than the addition of one.

The falling together of neuter and feminine referents is widespread and particularly common with reference to children and widows. The neuter pronoun substitutes for girls' names and nouns having a female referent. However, the use of the CK feminine pronoun, *avaḷu*, is common in my field data. In the process of adding a pronominal category, feminine gender, the Northern Havyaka Kannḍa speakers appear to be splitting the category further, using neuter to refer to sexless items and females in a sexually tabu state such as pre-puberty girls, post-menopause women, widows, and outcasted women; and the feminine pronoun *avaḷu* from CK for other females.

The use of plural pronouns to indicate respect is limited in HK to one's husband, father-in-law, the village priest, and situations of diplomacy. Even here the plural of respect is not always used. Although women state the plural of respect should be used in addressing husbands, if at all possible, they avoid addressing their husbands. When they do address them, they do so with either the singular or the plural of respect. The second person plural may

TABLE II
KANNADA PRONOUNS

	<i>Northern Havyaka Kannaḍa</i>	<i>Colloquial Kannaḍa</i>
<i>Singular</i>		
First	ā:, a:nu/ yenna	na:n, na:nu/ nanna*
Second	ni:, ni:nu/ninna	ni:, ni:nu/ninna
Third		
Masc,	avā/ avana	avanu/ avana
Fem,	adu/ adara	avaḷu/ avaḷa
Neuter	adu/ adara	adu/ adara
<i>Plural</i>		
First		
Excl.	yenga/ yengḷa	na:vu/namma
Incl.	na:vu/ namma	na:vu/namma
Second	ningo/ ningḷa	ni:vu/nimma
Third		
Masc. &		
Fem.	avaru/ avara	avaru/ avara

serve to deemphasize antagonism or to emphasize social distance, especially among those involved in disputes. In the presence of outsiders in folk tales the use of the plural of respect corresponds to CK usage, thus illustrating a sensitivity to diglossia situations.

The verbal class shows the most resistance to convergence of coexistence. Northern HK verbal morphophonemics and conjugation differ from those of CK. The morphophonemic alternation of the verb "to come" is the one in my data most affected by the CK forms. Other verbs having a similar alternation are the verbs "to go," "to be," "to become." All of these are frequently occurring verbs. Of this set, the verb "to come" occurs less frequently than the verbs "to be" and "to become."

The most frequent incidence of coexistence in the verbal conjugation is found in the first person. Confusion of forms is apparent from the use of the inclusive first plural pronoun with the colloquial Kannaḍa verbal form. There is also some alternation between the Northern HK and the CK first person forms and second person forms. This is not surprising since the inflectional vowels are similar and seem reversed, (See Table III)

* The oblique occurs after the slash. Sandhi forms such as *adar* and *adra* for *adara* have been omitted for the sake of simplicity.

Although morphological coexistence in HK is in its initial stages, coexistence occurs in areas of conflict. The CK locative. appears as often as the Havyaka locative. The use of the accusative for inanimate nouns in HK occurs sporadically, as one might predict of a form from LK. The first plural exclusive form has become confused with the inclusive form. These two appear to be merging in a closer approximation of CK. For all practical purposes, the Northern Havyaka second person plural from *ni:ngo* has been replaced by CK *ni:vu*. A direct question as to whether *adu* may be a referent to feminine as well as neuter nouns elicits a negative response. Yet the data shows the opposite. Although colloquial verbal forms in Northern Havyaka are relatively rare, those which occur are the ones most likely to be confused with Havik forms. Morphological coexistence in Northern Havyaka Kannada points in the direction of a merger with colloquial Kannada.

TABLE III
VERB FORMS

		<i>Northern Havyaka Kannada</i>		<i>Colloquial Kannada</i>	
		<i>Present</i>	<i>Past</i>	<i>Present</i>	<i>Past</i>
<i>Singular</i>					
First		ma:ḍti	ma:ḍdi	ma:ḍte:ne	ma:ḍde
Second		ma:ḍte	ma:ḍde	ma:ḍti:ye	ma:ḍti
<i>Plural</i>					
First					
Excl.		ma:ḍtya	ma:ḍdya	ma:ḍte:ve	ma:ḍde:vu
Incl.		ma:ḍta	ma:ḍda		
Second		ma:ḍti	ma:ḍti	ma:ḍti:ri	ma:ḍdiri

NOTES

1. Research in India was conducted on an American Institute of Indian Studies Junior Fellowship during the period from October, 1964, to May, 1966.
2. Totagadde is a pseudonym for the village where I conducted research, Totagadde is located approximately two-hundred miles northwest of Bangalore, the capital of Mysore State.

3. As an outsider working on the Havik dialect, I most likely added stress involving the breaking of the rules of diglossia, On the conscious level I received much assistance from the Haviks of Totagadde in working on the Northern Havyaka Dialect, But the inappropriateness of speaking the dialect with an outsider cannot be denied. Consequently, non-Havik forms may have occurred because of my presence. The stories are codified to an extent that I would expect my presence to have had a minimal effect. In any case, areas in which morphological coexistence occurred can be regarded as the part of the language most susceptible to convergence.
4. There are different ways of interpreting the nominative case morpheme. William Bright in *Outline of Colloquial Kannaḍa*, p. 35, considered the nominative case morpheme to be -A after vowels and ø (zero) after consonants.
5. The nominative identifies the noun classes. The four noun classes are as follows: i/e, u, and a inanimate and a animate.

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NOTE: References in the text marked with *are given in the list of references following the individual articles.

ABBREVIATIONS USED

- BSOAS=Bulletin of the School of Oriental and African Studies
CDIAL—see Turner 1966.
DBIA—see Emeneau and Burrow 1962.
DED—see Burrow and Emeneau 1961.
DEDS—see Burrow and Emeneau 1968.
DEN—see Burrow and Emeneau 1972.
DRAVLINGPEX=Dravidian linguistics papers exchange (ed. Harold Shiffman). Seattle, University of Washington.
IJAL=International Journal of American Linguistics
JAOS=Journal of the American Oriental Society
LSI—see Grierson 1903-28.
UCPL=University of California Publications in Linguistics, Berkeley, University of California.
Voc.—see Burrow and Bhattacharya 1960.
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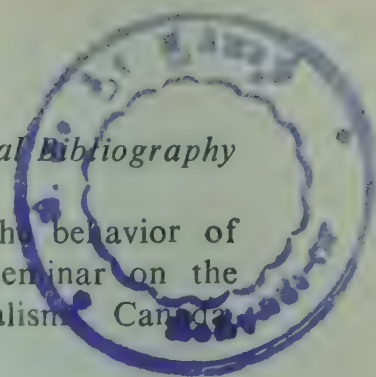
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ADDRESS TO THE DRAVIDIAN LINGUISTS

G. J. Somayaji

Vishakhapatana

I am deeply indebted to the scholars who have conceived the plan and organisation of this society of linguists, for the furtherance of studies in Dravidian Linguistics, for honouring me first in the opening session at Trivandrum in 1971, and then electing me as a President of this session. The first session held in the Kerala University, Trivandrum, was engaged in preliminary work and the second session for inauguration of the Research Institute at Tirupati. My worthy Predecessor, Professor Minakshisundaram, in his learned address in 1972 covered the entire field of Linguistics and explained in detail how a study of the subject is intimately connected with different branches of knowledge and helps a better understanding of them by the application of modern methods and aids. He also expatiated on how such studies can strengthen the unity of our country and develop mutual understanding leading to integration.

I restrict myself to a narrower area of this family of Dravidian languages in general and trace their study historically, in relation with linguistic studies in India, in the third confarence at Dharwar.

Linguistic studies from the stand-point of phonetics, grammatical structure, semantic and phonological changes, inter-linguistic loans etc. have been there in India as early as three thousand years back, if not earlier. This was necessitated by the desire of maintaining intact of a huge mass of vedic texts all in oral tradition, handed over from father to son, intended to spread over the whole country for the benefit of the inhabitants of this subcontinent of Bharat and of mankind in general. A band of intellectuals got by heart the Vedas as a religious duty (*Niṣkāraṇṣaṣaḍango, Vēdōdhyetavyogyeyasca*) and passed them on to the next generation. They have been contented with 'Umchavritti, Silāvritti, and Bhikshavritti' and spent all their energies in finding methods to maintain correct standard pronuncia-

tion, while the rest of the people in general were engaged, in the propagation of fine, useful and remunerative arts, sciences and professions.

Their first endeavour had been to recognise the organs of articulation, the points of contact, the stress, duration, the nature of stop, release, restraint and plosion of breath resulting in the SIKSHAS and the PRATISAKHYAS of various Vedic Schools. Their work has been complete, purposeful, minute in detail and clear in expression and analysis; and the modern phonetics developed at huge cost with highly complicated appliances, by various well-gifted individuals richly maintained by Universities and other learned bodies, have had to store old wine in new bottles with labels of modern terminology, embedded in linguistic formulae with graphic representation as equations, identities, analysis and synthesis in the matrices borrowed from mathematical notational technique. Those ancient basic conceptions have come up here and there undoubtedly. The essence has been the same.

The next aspect is the grammatical analysis. In this also, the various darsanas had presented us with most of the sentence-patterns and word-relationships. A sentence with a finite verb as the hub, and the different (Kāraka) components joining into it like the spokes of a wheel, the entire expression forming a unit, and a sentence where the whole idea is presented as a string of words, one qualifying the other like a train of wagons following each other, were some of their types. Many more are the linguistic speculations of Vaiyakaranas, the Tarkikas, the Karma mīmāṃsakas, the Vēdantins, and the ālamkārikas. All these are inherited by us though not familiar to many scholars amongst us. We are always trying to imbibe the essence that comes to us from the West, either through the English Shilling or the American Dollar. But in vintage our ancient cellars provide us with liquors not inferior or different from them. The historical truth has been, that we had to depend on our indigenous inherited cultures till the nineteenth century, when began a volte face, a new line of thought, and a different direction of approach inspired by the West. It was certainly enriched our vision, strengthened our moorings and gave us greater confidence in our work.

Linguistically the speculations originated for maintaining the Vedic Prakrits and the Vedic texts in shape, have developed into the huge Pāṇinian school of thought built upon many more ancient schools and disciplines, and became the standard pattern for the latter Prakrits, the Apabramsas, and the modern Indian languages. This knowledge has spread throughout the whole of Northern India

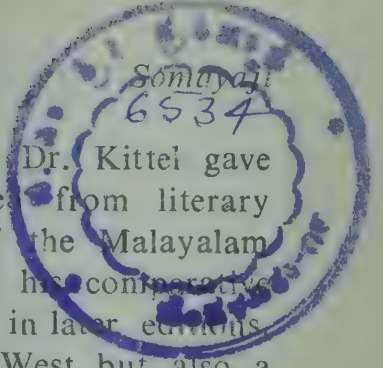
and extended into the South of the Vindhya where the Vaṇamoṇi has not been neglected or ignored but welcomed, studied and assimilated.

Following the above lead the later scholar studied the inscriptional and literary Prakrits and the earlier Apabhraṃsas, and the later ones and wrote grammars like Prakritprakāsa, prakritasarvasva etc. They also recognised the loans, in vocabulary in general, and even case suffixes which got acclimatised in the later languages. One common feature is that they are all mainly restricted, to Sanskrit and the derived languages. They were also familiar with dialects, their nature, growth, and literary metamorphosis. They distinguished the standard colloquial dialects and traced the origin and development of the spoken dialects. They studied them from a comparative stand-point and framed laws of phonetic change, from one dialect to the other, as their works show. They knew that all the modern Indo-Aryan languages were the offshoots of related dialects.

Though such an advanced stage of linguistic study has been achieved in the North, its influence on the Southern Languages has not been pronounced till very late. Of the four important Dravidian languages Tamil, Kannada, Telugu and Malayalam, Tamil maintains the earliest extant literature, embodying the then current verbal and nominal forms analysed by Agastya and Tolkāppiyānār. The influence of Sanskrit on the other three languages is so pronounced that most of their vocabulary is in the form of loans and their formal grammars were all cast in the traditional forms of Sanskrit language. Tamil also had its influence from 'Vaṇa Sol' which was the name given by them to Sanskrit Vocabulary. All the languages looked up to Sanskrit for inspiration and norms for copying, and terminology for borrowing. Literary and cultural content borrowed from Sanskrit is very pronounced and vast but it is beyond the scope of our topic, the linguistic aspect.

It is at this stage that a new turn was given to the study of these languages, which is really responsible for the ultimate recognition of the Dravidian family of languages as a group with well defined relationship

The foreign scholars who came to India, studied these languages, and the service they rendered for them especially by Dr. Caldwell, Pope, Kittel, Brown and Gundert is highly significant. Their approach was free from the prejudices resulting from the indigenous cultural atmosphere and they could chalk out a new line which yielded good results in every case. C. P. Brown could use his experience in editing Latin texts and started the method of preparing



a correct Telugu text from different manuscripts. Dr. Kittel gave Kannada, a dictionary based on citations collected from literary usage. Dr. Gundert could write a grammar of the Malayalam language on his own scheme. Dr. Caldwell gave us his comparative grammar of the Dravidian languages 1856 reprinted in later editions. He had not only his linguistic background of the West, but also a strong grounding in Tamil and the other Dravidian languages, a real rarity. The equipment necessary for a scholar capable of enquiring into the problem of Dravidian languages is a thorough grasp over Tamil language in all its aspects, an equal proficiency in Telugu, Kandada and Malayalam with a complete knowledge of Sanskrit grammar. In addition to these, if he has not a grasp of English language and the methods of research in Modern linguistics he will be practically useless for research of this time. Such scholars have always been rare, and Dr. Caldwell was an approximation to the standard prescribed above and he recognised the affiliation of these Dravidian languages. That has been his contribution, and as Prof. Minakshishisundaram has correctly pointed out Caldwell's monumental work in 1856 was very much ahead of his times. This great work not yet superseded even after a century's research by great scholars, though admired by many, has had its enemies. Dr. Caldwell like all scholars ambitious as he was, tried to solve all problems ultimately and has propounded a possible affiliation for the Dravidian languages with the Scythian group of languages not yet well investigated in his days, and this was an aspect contested by scholars in their search for truth, by alternate solutions like affiliation with the Finnish group of languages or an independent grouping.

There was a different attack from Sanskrit protagonists and politicians who wanted people to believe that Sanskrit was the mother of all Indian languages for various reasons which were different with different classes. Some thought that the unity of Bharata land was in jeopardy, others thought that Dr. Caldwell, an agent of the Imperial British, was driving a wedge into the huge log of Indian national unity, but when academic matters and conclusions of pure knowledge are dragged from the high-roads of incontrovertible evidence into the bilanes of partisan vested interests or political manouverings, scholars are helpless. And there were another type of pseudo-scholars who attacked Dr. Caldwell's book, wishing to win laurels by attacking the highest and get into lime light. Dr. Caldwell's great multistoreyed structure, may suffer from the peelings of plaster in this corner, or a slight leak in a seeping crack, of course discovered by patient scholars with minute and meticulous examination but the main structure still

remains intact until some seismic disturbance, erupts with enormous evidence of an uncontrovertable nature originating in the bowels of mother-earth unperceived by scholars.

With Dr. Caldwell a new era and an established family of Dravidian Languages was recognised and researches have been conducted by the young and old. Independent India provided many universities, research institutions, language academies, and the powerful shilling and the mighty dollar attracted a number of young men who got trained in English and American Linguistic schools and to-day we have directed our attention towards enquiry into the content, nature, and extent of the so-called uncultivated dialects or tribal languages, which show any characteristic, that can bring them into the fold of the Dravidian family

Dr. Caldwell in his *Comparative Grammar of the Dravidian Languages*, has enumerated 4 cultivated and 9 uncultivated dialects. To-day on the analogy of modern Indo-Aryan Linguistics which divided Indo-Aryan as Ancient Indo-Aryan, Middle Indo-Aryan and Modern Indo-Aryan by time, scholars have divided the off-shoots of Proto-Dravidian into three groups, South, Central and North Dravidian, by Regional consideration and grouped 18 more dialects in addition to the 4 so called cultivated Dravidian language of Caldwell (Tamil, Telugu, Malayalam and Kannada). All these 22 have again been sub-divided into groups on consideration of linguistic affinities. This is due to the work done by Western scholars as well as by a number of Indian scholars in the various research units, and Universities in our country. The dictionary compiled by Professors Emeneau and Burrow, has grouped a number of related vocables into clusters, whose ultimate relationship has yet to be determined by further analysis, before arriving at the probable form of Proto Dravidian Elements. A complete enumeration of the Inter-linguistic loans of the Modern Dravidian, and North Indian Languages has to be made and the underlying principles have to be established. Attempts have been made to list out the loans from English and other foreign languages assimilated by the Indian languages and vice versa, but none of these is thorough and scientific.

Attempts are being made to undertake dialectal surveys, by the Academies and University Scholars. The Telugu Academy amongst the many-sided activity of publishing standard text books, both original and translations in Telugu, has undertaken the publication of Dictionaries and collection of material from dialect-surveys and is planning to publish the grammatical variations of all of them in descriptive pamphlets. A similar work has been planned for being undertaken by S. V. University with reference to some areas.

Today we have ten major Universities in the South where a number of students every year undertake to do research, as recipients of studentships from the U. G. C. and other sources. There are a number of Professors who have published books, monographs, papers etc. All this is in addition to the work done by the Oriental Research Institute maintained by the Madras University, the Dravidian Linguistics Institute of Annamalai University, the Poona Deccan College and a few others. Every year many Students submit theses for the Ph. D. connected with both Literatures and Languages in these Universities. But one unfortunate thing is that no bibliographic account of these is available for reference. When I had been the Chairman of the Commission for Scientific and Technical Terminology and for sometime Principal Scientific Officer in the same organisation I tried to start such a work. I approached the U. G. C. in whose premises our office was located, but every one of my attempts proved abortive. I requested the Telugu Academy to take up the work at least for the Universities in the Telugu region, and they started the work but I cannot say, what success the effort has met with. Such a bibliography is a desideratum. It provides positive information on work done and helps to prevent duplication and take up new fields of research.

When I first started my studies of Telugu and the Dravidian comparative grammar in 1921, I realised my limitations as I was not familiar with the other Dravidian languages (Tamil, Kannada and Malayalam). I was not very good in Sanskrit either. There were a few people in those days who were reputed to be good at Sanskrit and the Dravidian languages, but when I read through their works, I found that their information was not thorough and methods unscientific. I met one Professor of English whose desire and efforts to study the literatures and languages of the Dravidian region, was great and that was Professor L. V. Ramaswami Iyer. He was my senior and we became great friends. I remember his great devotion, depth and width of linguistic proficiency. Then the number of scholars interested in this work was small and the resources were also limited.

Today things are quite different. There are many young men quite capable in their own way who are taking up to a study of Dravidian languages for their Masters degree and for further work in the form of research for the Ph. D. degree.

The responsibility of Universities and Professors lies in using this great enthusiasm for obtaining good results. Opportunities have to be provided for them, first to master the main language offered

for study, and facilities are to be created for equipping them with knowledge in other branches required for research. Every University should have full-fledged departments of study in all the Dravidian languages at least in South India. They have to be fully equipped with libraries suited for research.

After a candidate takes his degree, his mind is often engrossed in searching for employment. Research-admissions should not be taken up, as stop gaps for service. Every researcher has to be assured of a career, by encouraging him to continue his problem of study, and of employment afterwards. Everybody has to be employed. The brilliant should be attracted and retained to devote his energies for furthering research. Sympathy, understanding and patient guidance are necessary for helping the young men who opt for research.

For any linguistic research, a candidate should have proficiency in the grammatical knowledge of at least two languages. The farther those two are from each other in structure and affiliation, the better will be the equipment of the candidate for research. The results of modern linguistic researches of the world are to a large extent available in English, and the linguistic speculation of the ancient seers of our native land, are in Sanskrit, but their essence and interpretation are also available to a large extent in English. A proficiency in these languages will help one to make use of all that knowledge. More than a mere understanding of what is written in those languages, a researcher in linguistics should have a correct idea of their grammatical structure to understand the various technical terms used by the grammarians of those languages. An imperfect understanding and a wrong equation of fundamental conceptions lead to conclusions which cannot stand examination.

In this connection one word has to be said about our curricula regarding linguistic studies in our universities which provide the mother liquor, from which our bright jewel-like modern young men will have to be crystallised. Unfortunately we have neglected a study of the formal traditional grammars of all other languages along with that of English. A consistent and uniform effort of teachers has result in the grammarian's funeral and the public has sung the dirge to a resounding chorus, NO GRAMMAR. We have to retrace our steps and take up to rebuilding activity in the equipment of our scholars. All our hopes have to be fulfilled by them.

The institution which has been established by the Dravidian linguistic association housed in the S. V. University has made a proper beginning. Only two Governments have so far responded by grants. We hope that the other two Governments also will very

soon join. The work they have taken up to present before us, is a thorough and connected account of all the traditional grammars of the four languages which would serve as basis for determining the starting points of work. Studies of comparison, or contrast within the family of languages or with Sanskrit, English or any other language which we like to, can be made, therefrom. This work which is being done will be a source of information for all scholars in the world.

2. The technical terms used in the grammars in the Indian languages will have to be analysed and their basic conceptions be compared or contrasted with the Western grammatical terms so that the syntactical differences in the different languages can be better understood e. g. an 'avyaya' and 'adverb' a 'preposstion' and a case-ending', A 'finite verb', and 'Vidhēyavisēshaṇa' etc.

3. Dialectal Surveys will have to be completed and grammars have to be written out for them

4. The semantic divergencies in the various Dravidian Languages from the Proto-Dravidian will have to be analysed and completely summarised so that they may be classified for any possible conclusions.

There are so many other types of work, connected with the teaching and study of languages, but some of these have to be taken up in other institutions which are specially equipped for that purpose, and the total amount of work has to be divided among the various agencies in the country.

At present there seems to be a lot of duplication and wastage of avoidable effort. This Association will have first to attain financial stability by getting grants from the governments. Better accommodation has to be found so that when new scholars are appointed, they can be housed properly. The Association has prepared an exhaustive blueprint for the fifth plan period. I hope that all the Governments will agree to help this Association, to achieve its objects.

We have just started and we shall have to steer our activities in such a way as to gain more popularity to enable us to be more useful to the cause we take up.

I have to say a few words about a certain feeling amongst the leaders of this country that language is the source of many of our troubles. Our linguism is leading the country into division and not to unity. This may be a fact, but language is not the cause for it. Language has been a great unifying factor, I would correct myself

by saying the 'greatest'. Language is for expression of thought and ideas. It unites man with man, creates understanding between them, brings together a clan or a sect into existence, the clans develop into nations, and we realise the vast humanity as one by understanding and not by dumbness, or lack of communication, or by misunderstanding. It unites the past with the present and projects man in to the future and it travels from one part of the globe to another. It embodies knowledge which is not limited by space, time or the mind. It is the embodiment of Brahman, the soul. You may ask me, then why do people fight on language issues. Their motives are different from languages. The causes are Rāga and Dvēsha. When people at a meeting hurl paper weights, flower vases and benches at each other the causes for the fight, are not those which they hurl at each other, but their attitudes.

From very many quarters I hear that there is a lot of plagiarism and unacknowledged repetition being passed on as research. I heard the great Pearl Buck the recipient of the nobel prize saying that her works are copied or adopted without acknowledgements. This is a process which has been there from the days of Adam and Eve and it is the duty of a scholar to invent or discover but the ownership belongs to every body. Let us not complain about it.

I wish to close with two slokas of Rajasekhara.

O great poets, do protect the nectar, which you have extracted after churning the huge ocean of literature. Like demons to steal the Amrit, plagiarists are prowling around.

Or let people take it away as it pleases them to do. What is the adverse effect produced on great writers? Though many gems were extracted by the Gods from the ocean, the ocean is a Ratnakara for all time.

Let us worship knowledge, through language let us master it. Let us give up Rāga and Dvēsha. We attain unity.

GENERATIVE SEMANTIC METHODS A BLOOMFIELDIAN COUNTERREVOLUTION

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The generative semantics generative grammar (GS-GG) controversy is a dispute about the goals and methods appropriate to linguistic research. GS can be thought of as the results obtained by applying the methods of pregenerative (taxonomic) linguistics to justify taxonomic grammars which have a generative flavor, i. e. formulations which use the terminology of generative grammar, but which contain no rules to generate sentences. In GS, the search for substitution classes is now research on lexical entries. In motivating GS formulations, Postal, Fillmore, McCawley, and others use procedures of segmentation and classification to devise surface structure cooccurrence and substitution tests. Some GS theorists, Postal more so than others, consider evidence revealed by surface structure slot-filler tests to provide direct insight into underlying forms. Postal's research into the abstract underlying structure of pronouns is based on Bloomfield's notion of *form class*. Evidence shows that the goal of Postal's grammatical research on pronouns is to achieve a formulation which captures distributional similarities discovered by his slot filler-tests. Maclay, in a Kuhn revolution-of-science framework, suggests GS is a 'next step' beyond the *Aspects* model. I disagree. Evidence strongly suggests that certain GS workers, Postal and Fillmore in particular, are attempting to lead a counterrevolution against the *Syntactic Structures* notion of generative grammar and reinstate Bloomfieldian taxonomic methods. I discuss Postal's slot-filler tests and discovery procedures in detail.

1. Background and problem statement. Maclay (p. 178) argues that the conflict between Generative Semantics and Generative Grammar, henceforth GS and GG respectively, is a contest between alternative theories attempting to account for problems of language.² The old theory, GG, cannot handle the new problems, but GS can.

The contest will be decided among scholars who have similar goals and objectives. Maclay indicates that the class of relevant data has something to do with semantics or meaning: 'The common denominator [of the GS supporters] is a conviction that semantic criteria are at least equal in importance to other factors in justifying solutions to linguistic problems and that semantic problems are an appropriate beginning point for a linguistic investigation.' (p. 178) Presumably, I suppose, the implication is that the supporters of GG do not believe that semantic criteria are as valid as other criteria.

Maclay further states: 'The key issue between Chomsky and [the GS supporters] is the autonomy of syntax. If no principled boundary can be drawn between these two areas, then there can be no distinct level of syntactic deep structure and the question of whether or not semantics is interpretive becomes irrelevant.' (p. 178)

I disagree with this picture. The primary differences between GS and GG are methodological and concern attitudes towards research. I will support this position by examining the methods used by GS supporters and by comparing these methods with Chomsky's methods.

Generative semanticists have pointed out that the GS perspective was arrived at by consistent application of certain methods of research to new problems. Lakoff states:

Generative semantics is an outgrowth of transformational grammar as developed by Harris, Chomsky, Lees, Klima, Postal, and others. The generative semantics position was arrived at through an attempt on the part of such linguists as Postal, Fillmore, Ross, McCawley, Bach, R. Lakoff, Perlmutter, myself, and others to apply consistently the methodology of transformational grammar to an ever-increasing body of data (p. 232, fn. a)

One of my goals is to explicate the generative semanticist's notion of 'the methodology of transformational grammar', the methodology that Postal, Fillmore, Ross, Lakoff, et. al. used to arrive at the GS position. I will call this methodology GS methodology and the methods GS methods. My analysis shows that GS methodology is distinctly different from the methodology of transformational grammar discussed in *Syntactic Structures* and *Aspects*, which I call *Generative Grammar (GG) methodology*. My work attempts to isolate and define GS methods so they might be compared with GG methods.

My main goal is to put the GG-GS controversy into its proper perspective: GG and GS should be compared at the methodological level. The theoretical differences between GG and GS have little to

do with the structure of language. They are largely attributable to different attitudes about the goals and methods of research.

Certain linguists believe that GS has received its primary impetus because GS formulations can provide revealing explanations for a certain class of problems which cannot be accounted for by GG, and further, that GS can be viewed as a possible 'theoretic next step' which can supplant GG. For example, Maclay states: [emphasis added, RCD]

Efforts to extend the paradigm of GT-2 [i. e. the *Aspects* model] to an increasingly wider range of linguistic facts have driven the linguists of GT-3b [i. e. the GS model] to raise a variety of objections to a number of the fundamental assumptions on which the standard theory is based. McCawley (1968) provides a striking example of this shift. The major portion of this article accepts (though critically) the standard theory which is then rejected in a postscript where many of the arguments found in McCawley (this volume) are presented. One gets a certain sense of historical inevitability when observing this process. *The remarks in Lakoff (1972:232, note a) describing the development of generative semantics sound very much like Kuhn's description of the period when an established paradigm is coming under attack for its failure to solve legitimate problems;* If this is the beginning of some sort of linguistic revolution, its magnitude should not be overestimated. The battle between Chomsky and his critics [i. e. the battle between GG and GS. RCD] is being fought according to rules which Chomsky himself developed and is *essentially a sectarian war among scholars who share a common understanding as to the general goals of linguistic analysis.* All agree that the aim of a linguistic description is to explain the relationships between two independently specifiable entities: sound and meaning. Further, it is held that descriptions must contain a lexicon and that transformational rules which map phrase markers into other phrase markers are fundamental mechanisms of linguistic theory. Although the existence of a distinct syntactic level of deep structure may be in dispute, no one denies that a distinction has to be made between surface structures and underlying structures. This shared system of values permits confrontations of a very direct and intense sort among linguists who hold different views. (p. 178)

According to Maclay, the controversy of GS and GG is fought at the theoretical level between scholars who share the same

views about the goals of research and the methodology of generative studies. I disagree with this analysis and offer the following perspective.

Syntactic Structures caused a revolution in linguistics on two fronts: a theoretical front and a methodological front. On the theoretical front, success has been almost complete. The pregenerative theoretical model of phrase structure (PS) grammar and no recursive ruler has given way to a more complex theoretical model with PS rules, recursive devices, transformational rules, lexical mechanisms, complex symbols, etc. On the other hand, the revolution in methodology has not been won. The pregenerative methods (1) have not been supplanted by generative methods (2):

(1) Pregenerative methods

- (a) Do not present any rules to generate sentences.
- (b) Rely on procedures of segmentation and classification to discover distributional similarities among strings in the surface structure.
- (c) Rely on surface structure distributional information to provide information about deeper aspects of linguistic form.

(2) Generative methods

- (a) Present rules to generate sentences. Formulate the rules of the grammar explicitly so they will make testable claims about the set of well-formed sentences in the language.
- (b) Use the method of hypothesis testing.
- (c) Place no reliance on surface structure substitution tests to discover linguistic form.

I have diagramed two possible interpretations of the status of GS. Figure (1) is essentially Maclay's assessment: Pregenerative theories and methods were supplanted by generative theories and generative methods yielding GG. These generative methods applied to new data have yielded various discoveries about language and culminate in GS, a viable contender for 'next step'. In this view, the methods of GG and GS are the same, but the theories are different.

Figure (2) reflects my understanding: Pregenerative theories are supplanted by generative theories and concepts. Concerning methods, however, two groups arise: One group supplants pregenerative methods with generative methods; the other does not

accept generative methods and continues in no small way to use pregenerative methods. The former is GG, the latter is GS. In this analysis, GS can be thought of as the result of applying pregenerative methods to justify theories with a generative flavor. In my view, GS is not a 'next step', but a ghost from the past which still haunts. The theoretical differences between GS and GG are largely attributable to the methodological differences.

Which perspective is correct is an empirical question. We must closely examine the methodology of GG and GS to see if they are the same or different. If they are different, we must see if the methodology of GS approximates that of pregenerative grammar. In section 2, I discuss the GS methods. I specifically look for evidence of pregenerative methods. 1.

My work will provide a perspective from which we can analyze the structure of the arguments linguists use to choose between alternative grammars. Within the scope of this article, this can best be brought out by concentrating on selected topics, and by investigating, in specific cases, the methods employed by the authors to substantiate their claims. What justifications do they offer for their grammars? For this investigation, it is not crucial if the authors still subscribe to these grammars, I am interested in their methodology. Presumably, each author feels that his article is or was a serious well-argued contribution to the field.

GS has enjoyed two vintage years: 1966 and 1968. In 1966, the following ideas were advanced:

- (3) Notions from formal logic may be incorporated into the grammatical model.
- (4) The underlying structure of pronouns is quite abstract.
- (5) The *Aspects* notion of deep structure might not be abstract enough and perhaps a 'semantic deep structure' organized around case notions should replace the *Aspects* notion of deep structure.

Lakoff and Peters argue for 3 by attempting to incorporate the notion *symmetric predicate* into the grammatical model. Postal 1966 supports 4 by arguing that pronouns are actually deep structure articles. Fillmore 1966 champions 5. Recall that Lakoff states, 'The GS position was arrived at through an attempt on the part of such linguists as Postal, Fillmore, Ross, McCawley, Bach, R. Lakoff, Perlmutter, myself and others to apply consistently and methodology of transformational grammar to an ever-increasing body of

data, (p)232, fn a) Since the above articles were in the vanguard of the GS movement, I will direct considerable attention to the methodology employed in these articles. What was the methodology that Postal, Fillmore, Lakoff, et. al, were consistently applying?

Figure (1). Maclay's perspective on linguistic developments.

	Pre. Gen.	GG View	GS View
THEORY	PS rules	PS rules	PS rules
	no recursion	recursion	recursion
		Transformations	Transformations
		lexical devices	lexical devices
		features	features
		etc.	etc.
METHODS	(1a-c)	(2a-c)	(2a-c)

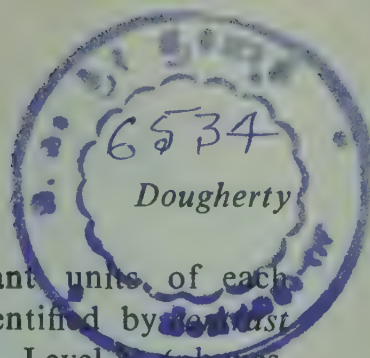
Figure (2). An alternative view of linguistic developments.

	Pre. Gen.	GS View	GG View
THEORY	PS rules	PS rules	PS rules
	no recursion	recursion	recursion
		Transformations	Transformations
		lexical devices	lexical devices
		features	features
		etc.	etc.
METHODS	(1a-c)	(1a-c)	(2a-c)

Bach and Harms, which might be considered the manifesto of GS, reviewed by Dougherty 1970a, included contributions by McCawley, Bach, and Fillmore. Essentially, they argue to reinforce positions 3-5. I will direct some attention to the methodology of these papers. It is essentially the same as that in the 1966 papers.

2. Pregenerative methodology. In my view, GS can be thought of as the result of applying pregenerative methods to justify theories with a generative flavor. To clarify this statement, we must first understand the pregenerative view of linguistic research. Maclay gives a concise summary of pregenerative (taxonomic) methodology and describes the basic technique of segmentation and classification:

[The goals of this analysis] structural linguistics are essentially classificatory, thus the term *taxonomic* is often applied to this school of linguistics. All of the operations are based on the notion of *formal distribution* which is for any element, the list of immediate environments defined by its co-occurrence with other elements of the same type. Two ordered operations are used in the analysis of distributions which we may label *contrast*



and *substitution*. The functionally significant units of each component (phonemes and morphemes) are identified by contrast. Given distributions for the set of element at Level N (phones, morphs), the elements of Level N+1 (phonemes, morphemes) are formed in the following way. If two elements of N occur in one more of the same environments (i. e. if their distributions overlap), they are in *contrastive distribuion* and must become members of different elements at Level N+1. If, on the other hand, their distributions do not overlap, they are in *complementary distribution*. Under this condition, the elements are eligible for membership in the same element of N+1. Whether or not they are placed in the same element of N+1 depends, in practice, on such non-distributional considerations as phonetic similarity (for phonemes), meaning (for morphemes), and perhaps some notion of symmetry. The operations are then repeated in the same way for the next highest component which takes as input a transcription provided by the lower component.

Given, now, a set of elements on N+1, new distributions for these are calculated and the elements classified on this level by *substitution*. If two or more elements occur in many of the same environments (i. e. their distributions are similar), they are placed in the same class. It should be noted that both operations can apply to the same data. *Contrast* is involved in the transition from level to level within components while *substitution* operates only within a given level...

...Perhaps because syntax is so far removed from the basic data, its position in a structural analysis is rather insecure. *A structuralist asked to describe his methodology is likely to follow the course adopted here and concentrate on phonemics. A representative study of English syntax is that of Fries (1952) in which he ignores the problem of identifying syntactic elements (words) and uses *substitution* to categorize words into syntactic classes. His noun-like Class I, for example, is defined on the occurrence of words in such environments as The — was good. Sentences are then represented as sequences of word classes. (pp. 159-61)

*Footnote: [In Harris (1951)]... Words are classified by substitution and sentences are represented as sequences of word classes.

As Maclay points out, a taxonomist uses *substitution* to define the syntactic categories of constituents. He mentions

that Fries defines noun *Class I* as elements occurring in the environment:

- (6) The — was good.

This technique of classifying constituent structure by substitution tests could be used to isolate and define the classes: *definite NP* and *indefinite NP*. One might—quite arbitrarily to be sure—define the elements which can be substituted in the slots in 7, but not into the slots in 8, as *definite NP's*. The elements which can be used to fill the slots in 8, but not in 7, are *indefinite NP's*. Applying these substitution tests to the primary data of English, a diligent linguist could discover that the strings in 9 were *definite NP's*, the strings in 10 were *indefinite NP's*.

- (7) (a) Big as — was, he couldn't lift it.
 (b) — is John's.
- (8) (a) It was — for Jack to leave.
 (b) There's — on the table.
- (9) *Definite NP's*, the boy, Harry, that gorilla, Fido, the house, that car, the idiocy, that scandal, John, the key, he, she, it, etc.
- (10) *Indefinite NP*: some giant, a dog, soup, some dog, a car, idiocy, a scandal, a book, some object, etc.

These tests illustrate the taxonomic methods discussed in the last two paragraphs on the Maclay quote above. These substitution tests for constituent structure, which classify constituents according to their surface structure distributional similarities, are essentially those in Postal 1966:

Diagnostic environments for definite NP's include special constructions with preposed adjectives illustrated by such sentences as:

- (7) (a) Big as the boy was, he couldn't lift it.
 (b) Big as Harry was, he couldn't lift it.
 (c) Big as that gorilla was, he couldn't lift it.
 (d) * Big as some giant was, he couldn't lift it.
 (e) * Big as a dog was, he couldn't lift it.

Similarly, only definites occur as subjects in constructions like:

- (8) (a) Fido is John's.
 (b) The house is John's.
 (c) That car is John's.

- (d) * Soup is John's
- (e) * Some dog is John's.
- (f) * A car is John's.

On the other hand, only indefinites occur in such contexts as:

- (9) (a) It was idiocy for Jack to leave.
- (b) * It was the idiocy for Jack to leave.
- (c) It was a scandal that Louis spoke.
- (d) * It was that scandal that Louis spoke.

Another diagnostic environment for indefinites is given by constructions with nonlocative, anticipatory *there*:

- (10) (a) There's a book on the table.
- (b) There's some object on the table.
- (c) * There's John on the table
- (d) * There's this key on the table.—?

These diagnostic environments lead Postal to discover a basic fact about the surface structure distribution of pronouns:

But investigation shows that all of the so-called pronouns are thereby definite NP's:

- (11) (a) Big as I am, I couldn't lift it.
- (b) Big as they were, they couldn't lift it.
- (12) (a) It is Billy's.
- (b) They are Jack's.
- (13) (a) * It was it for Jack to leave.
- (b) * It was it that Louis spoke.
- (14) (a) * There's me on the table.
- (b) * There's you in the house.

(p. 205)

The kernel facts can be stated succinctly:

- (11) Postal's discovery: The personal pronouns *he*, *she*, *we*, etc. can be substituted into the slots in 7, but not into the slots in 8, and therefore, pronouns are to be included in the substitution class: *Definite NP*.³

In a discussion of discovery procedures, Chomsky 1957 indicates that procedures of segmentation and classification, i. e. slot filler tests, diagnostic environments, etc., are useless if our goal is to construct a generative grammar. Chomsky argues, quite persuasively to my mind, that the linguist must seek to evaluate grammars which

generate the sentences of a language and not attempt to construct substitution tests to discover facts about the surface structure distributional similarities of strings. Postal starts his article by presenting slot filler tests to indicate that pronouns occur in the slot *Definite NP*. If these tests are relevant to Postals, analysis, then he is not engaged in motivating a generative grammar. If they are not relevant to his analysis, why does he present them?

These slot filler tests are crucial to Postal's presentation since it is only in terms of the slot filler tests that he can formulate his 'problem'. The 'problem' is to account for the distributional similarities between strings like *the men*, *the boy*, etc. and the pronouns *we*, *he*, etc. Postal discovered these distributional regularities through the use of diagnostic environments. Postal uses pregenerative (toxicomic) methodology to isolate and define the 'problem'.

Postal's 'solution' to the 'problem' revealed by diagnostic environments is to assume that pronouns are deep structure articles.⁴ I am not concerned with the theoretical virtues of this proposal, I am more interested in the methods he uses to justify his claim

To justify his 'solution' to the 'problem' discovered by diagnostic environments, Postal again appeals to pregenerative methods. He states:

[In sequences like *we men*, *we policemen*, etc.] we actually find the so-called pronouns *we/us* and *you* as *articles* in the *surface structures*. [Postal's emphasis, RCD] And this is among the strongest evidence for our overall claim that so-called pronouns have essentially the same type of derivation and status as traditionally recognized definite articles. (p. 219)

What does Postal mean: 'we actually find the so-called pronouns *we/us* and *you* as *articles* in the *surface structures*'?

I understand this as follows: There are certain diagnostic environments (to use Postal's term) such that anything which may be substituted into that environment is an *article*. Postal's argument assumes that diagnostic environments for the constituent *article* are:

(12) Diagnostic environments for the constituent *article*:

(a) ———men

(b) ———policemen

As I mentioned, Chomsky 1957 indicated that procedures of segmentation and classification play no role in constructing or justifying a generative grammar. I conclude therefore that precisely

to the extent that Postal's claim is supported by considerations based on diagnostic environments, his claim has nothing to do with generative grammar.

Postal makes clear why his paper is a substantive contribution to linguistic research. The basic problem with analyses previous to Postal 1966 was the heavy reliance linguists placed on surface structure to indicate aspects of linguistic form:⁵

...It is the thesis of this paper...that these analyses [previous to Postal 1966] ignore some important facts and that there is concomitantly a good deal also wrong in them. Furthermore, what is wrong can be seen to arise from the almost inevitable tendency in grammatical research to assume wrongly that the surface or superficial syntactic forms of sentences provide direct insight into (or are even identical to) their deep syntactic forms. (p. 203)

An obvious discrepancy exists between the strong antitaxonomic position of Postal 1964 and the heavy reliance on taxonomic methodology in Postal 1966. These were the formative years of the GS perspective. I believe there is a distinct connection between the influx of taxonomic methodology and the rise of GS. It is the taxonomic methodology in Postal 1966 that led to his 'discovery' about how abstract the deep structure of pronouns really was. I return to this topic in S⁴. Postal's diagnostic environments 7 and 8, which led to his discovery 11, illustrate the basic techniques of pregenerative (taxonomic) grammar: substitution tests to discover constituent structure. Postal places heavy reliance on pregenerative (taxonomic) methodology in deed, but not in conscience.

Postal 1966 presents a curious blend of pregenerative methodology and generative theories. For this reason, and for reasons made clear in Delorme and Dougherty, and in Dougherty (1972), I find it difficult to come to firm conclusions about the goals of Postal's research.⁶ One main goal of Postal 1966, I believe the main goal, is to construct a grammar which accounts for distributional similarities among classes of constituents (or strings) in the surface structures. These distributional similarities are 'discovered' by diagnostic environments defined in terms of surface structures strings. Postal concerns himself mainly with devising appropriate terminology to record and organize surface structure phenomena. To the extent this is true, Postal is engaged in the construction of a descriptivist grammar, not in the construction of a generative grammar⁷.

If the goal of a linguist is to record and organize surface structure data, then rules are not required; it suffices to (1) present

diagnostic environments to define the classes of relevant data and (2) devise appropriate terminology to record and organize the phenomena. Postal makes only the feeblest attempt to present his material in a generative framework. He assigns names to the rules which would be required. Since there are no actual rules attached to these names, the rule names could be viewed as terminology to record and classify the data discovered by his use of diagnostic environment⁸.

If Postal's goal -- based on what he does, not on what he claims to be doing -- is to account for surface structure distributional similarities, then his goal would not be far removed from the goals of the pregenerative linguists. Chomsky 1966 offers this summary of pregenerative linguistics :

...[The] fundamental assumption [of structural linguistics] is that procedures of segmentation and classification, applied to data in a systematic way, can isolate and identify all types of elements that function in a particular language along with the constraints that they obey. A catalogue of these elements, their relations, and their restrictions of 'distribution', would, in most structural views, constitute a full grammar of the language. (p. 6)

According to Chomsky, the goal of pregenerative linguists was to present a catalog of elements, their relations, and their restrictions of 'distribution'. Stretching our imagination a bit, let us consider this problem: If a structural linguist using taxonomic methods gets a 'taxonomic catalog', would a generative linguist using taxonomic methods get a 'generative catalog'? The term 'generative catalog' is inherently contradictory, a juxtaposition of opposites. The term 'generative catalog' describes something that is neither fish nor fowl, in short, it is exactly the term needed to describe certain recent contributions to linguistic research.

I have selected 'generative catalog', an inherently contradictory term, to emphasize that, on several crucial points, there is a juxtaposition of opposites in certain generative semantic writing. Consider the distinction between what is said and what is done: Postal 1964 denounces substitution tests as a tool of linguistic research. Postal 1966 contends that linguists place too much reliance on surface structure to indicate aspects of linguistic form. But Postal 1966, a paradigm of the taxonomic art, uses surface structure substitution tests to define his 'problem', i. e. to account for his discovery 11. He further justifies his 'solution' by using surface structure slot-filler tests. Postal 1966 is a difficult article to read.

Let us look at another juxtaposition of opposites. McCawley 1968. enters upon the GS-GG controversy armed with a double-edged sword: an article which argues both for and against a co-ordination reduction transformation. In his main text, he argues against deriving 13 from 14 by a co-ordination transformation. In his postscript, he reverses his stand and decides that 13 is indeed derived from 14:

(13) John and Bill went to Cleveland.

(14) John went to Cleveland and Bill went to Cleveland.

The arguments in McCawley's main text are far more coherent than those in his postscript. I, see Dougherty 1970a, find the main text more persuasive. Others, see Postal 1970, find the postscript more persuasive. Notice the Machiavellian character of McCawley's paper: Whichever position you take. McCawley's mode of presentation has the distinct advantage that McCawley cannot be shown to be wrong. Furthermore, whether there is a co-ordination transformation to relate 13 and 14 or not, McCawley was right all the time. McCawley's mode of presentation is optimally suited to presenting large amounts of data. By arguing for both positions, McCawley can present a great deal more data than if he wrote an article in which, after presenting the two alternatives, he restricted himself to crucial examples to choose between the alternative conceptions of grammar.⁹

I believe we can distinguish at least three types of research papers.

One is a paper presenting a generative grammar. It will have certain characteristics: (1) A paper presenting a generative grammar will contain a set of rules which assigns structural descriptions to sentences with no appeal to the intuitions of the linguist. (2) The set of rules will make testable claims about which are the well-formed sentences in the language. And (3), the emphasis will be on comparing alternative formulations to achieve the simplest combination of PS rules, transformations, etc. to describe the data.

A second type of article presents a catalog. The earmarks of such an article are: (1) The paper will contain no rules to generate sentences. (2) There will be a preoccupation with the establishment of word classes, perhaps by substitution or cooccurrence tests. (3) There will be little, if any, comparison of alternative grammars, but considerable emphasis on devising surface structure substitution tests, like diagnostic environments 7, 8, and 12 to discover facts like 11 about the distributional similarities of surface structure strings.

A third type of paper presents a generative catalog. It will have the earmarks of the second type of paper, listed above. A generative catalog can be thought of as a catalog with generative overtones. The author may be explicit in his use of taxonomic devices, as Postal 1966 is, but he may not be. The catalog can be given generative overtones (1) by adding some discussion of universals, cognitive psychology, semantics, etc., (2) by naming rules but not presenting them - thereby giving the impression that the rules could be formulated, and (3) by using terms from generative theory to delineate the classifications - for example, instead of saying he is establishing 'substitution classes', the linguist contends he is specifying 'lexical entries'. Of course, he never presents rules to indicate how these 'lexical entries' wend their way into actual sentences.

I wish to draw attention to the third type of article. The characteristics of a generative catalog can be illustrated by considering examples of analyses which are generative and untaxonomic in tone but ungenerative and taxonomic in final result and methodology.

I believe - based on what they do, not on what they claim to be doing - that Postal 1966 and Fillmore 1966, 68 present generative catalogs. Fillmore is discussed below. If the goal of research is the classification and the expression of distributional similarities, then rules to generate sentences need not be presented. Neither Postal 1966 nor Fillmore 1966, 68 presents rules to generate sentences.

Rules which are not presented may be named, however, and elements in surface structure may be classified in terms of the rule names. For example, one may set up classes of elements which may optionally undergo rule X, which must undergo rule X, which cannot undergo rule X, etc. - all without ever presenting rule X. 10 The classes are defined in terms of a non-existent rule. This is not at variance with taxonomic procedures. The terms in which classes are defined are arbitrary, some taxonomists used numbers. See Harris 1951. For classification, the name of a non-existent rule is no better or worse than an integer. It should be obvious that a generative catalog is a much more complex and misleading device than a taxonomic catalog.

The concepts presented above can be illustrated by an example which will prove useful in understanding Fillmore's case grammar. The following example shows how one might go about setting up a generative catalog.

Most of us are familiar with the organization of Webster's dictionary and Roget's thesaurus. Webster listed words in order

according to their spelling. Roget grouped words according to similarities of meaning. One could group words along other dimensions. The *N. Y. Times Crossword Dictionary* groups words according to the number of letters they contain. *Eaton's word Frequency Dictionary* groups words according to their extent of usage. *Whitfield's Rhyming Dictionary* groups words according to the number of syllables and the phonetic quality of the last syllable. Let us imagine an enterprising soul who would set about to compile a list of verbs grouped according to their possible range of complement structures in the surface structure.

Of course, this soul would need some terms in which to perform the classification. Just as Roget in compiling his thesaurus had to find a set of terms in which to classify his words, the person who wished to classify verbs according to their possible range of surface structure complements would have to invent classifying terminology. The terms Roget selected, e. g. *existence, relation, quantity, order, space, power*, etc., were arbitrary, but not random. So too, our hero would be wise to select classifying terms which were at random, although they are almost certain to be arbitrary. He might select terms which people have vague intuitions about, say, *agent, instrument, object, dative, locative, benefactive*, etc. These terms are called *cases*.

Armed with these cases, and intent on classification, he could invent a notation to represent surface structure strings. If classification is the goal, a notation to represent strings is sufficient. Only if he wishes to construct a generative grammar will he need rules to assign these notations to strings. To achieve his classification, he could set up diagnostic environments utilizing the cases.

Let us call *John, thing, tool*, and *Bill* by the terms *agent object, instrument*, and *dative* in the following examples. The following substitution tests will define classes of 'lexical entries':

(15) Substitution class I :

- | | | |
|-----|-------------------------------|-----------------|
| (a) | John—the thing with the tool. | AGENT—OBJ—INSTR |
| (b) | The tool—the thing. | INSTR—OBJ |
| (c) | The thing—. | OBJ— |

(16) Substitution class II :

- | | | |
|-----|--------------------------------|---------------|
| (a) | John —Bill the thing. | AGENT—DAT OBJ |
| (b) | John —the thing to Bill. | AGENT—OBJ DAT |
| (c) | Bill was—en the thing by John. | DAT—OBJ AGENT |

The elements *break, open*, etc. are in class I. The elements *give, sent*, etc. are in substitution class II.

There is no need to call the substitution classes class I, class II, etc. We could make what the mathematically inclined might call a 'change of variables'. Thus, we could express the classes in a new and more obscure set of coordinates and simultaneously give the analysis some generative overtones. The substitution classes could be specified in terms of the notions *agent*, *instrument*, etc. They could be written as:

- (17) (a) Substitution class I = V (agent) (instr) object: *break*, *open* etc.
 (b) Substitution class II = V agent (dative) object: *give*, *send* etc.

The terms *agent*, *instrument*, etc. specify the behavior of the elements of the class with respect to the Subject Selection Rule. But the Subject Selection Rule does not exist. So, we have a notation (*agent*, etc.) which enables us to represent the substitution classes in terms of characteristics of the non-existent Subject Selection Rule. As I mentioned, some taxonomists employed numbers to represent the substitution classes. Specification in terms of behavior with respect to a nonexistent rule is no better or worse. That is, theoretically no better or worse. Methodologically, it might be worse since we might be deluded into thinking we were constructing a generative grammar and not realize that we are actually producing a specimen of the taxonomic art.

It is quite a simple matter to give this taxonomic analysis some additional generative overtones. A dash of universal grammar: The cases *agent*, *instrument*, etc. are universal. A sprinkle of semantic-cognitive psychology: The cases reflect deep-seated regularities about our perception of the world. A hint of plausibility: Papago, Mohawk, Tagalog, and Urdu look as though they would be trivially described by this analysis. But pray, give pause. Take heed. All of these generative overtones are quite beside the point unless we can show our grammar *is* a generative grammar. It is not enough to claim we are constructing a generative grammar. Nor is it sufficient merely to have a notation to represent strings. A generative grammar must incorporate the principles which assign the notations to strings. A generative grammar is a device which generates sentences and assigns each sentence a structural description.

I believe that the results of Fillmore's case studies are not substantively different from the results a taxonomist would achieve if he used substitution tests like 15-16 establish a list of verbs classified according to their range of surface structure complements. The two analyses are isomorphic, they have the same structure and

appearance. The taxonomist could represent his substitution classes in a notation, like that in 17, to indicate in a vague way what the range of complements of any given class might be. The classifying notations, e. g. $V(C_1)(C_2)C_3$, etc., including conventions on (), could be interpreted to mean that the verb in the class occurred in the surface structure with various permutations and combinations of those cases in its class name, e. g. C_1, C_2, C_3 , etc. This is no more or less than Fillmore has done. In Fillmore's case grammar, as in the taxonomist's grammar, no coherent set of rules interprets the notation in 17 to indicate precisely what permutations and combinations of the cases do occur. That is, in neither case are there any rules to generate sentences.

Although their grammars are isomorphic, Fillmore and the taxonomist doubtlessly differ in their intentions. Similarly, although Postal uses taxonomic procedures to discover facts about constituent structure, to pose problems about the surface structure distribution of strings, and to justify his solutions, he doubtlessly intends to construct a generative grammar. Doubtlessly, the road to generative semantics is paved with generative intentions.

Consider these alternative views of linguistic research:

(18) Pregenerative view :

- (a) The *goal* of constructing a grammar is to capture distributional similarities between strings in surface structure. Our grammar must express the generalizations that obtain between strings with respect to their 'distributional' similarities.
- (b) A *grammar* of a language L is a catalog of elements that function in L classified according to their relations and their restrictions on 'distribution'.
- (c) *Methods* are required to discover the grammar. Procedures of segmentation and classification are used to isolate and define constituents in surface structure. These procedures may be formulated in several ways: as diagnostic environments, as co-occurrence tests, etc.

(19) Generative view :¹¹

- (a) The *goal* in constructing a grammar is to achieve the simplest combination of PS rules, Transformational rules, lexical devices, etc. that will generate all and only the well-formed sentences of a language L.
- (b) A *grammar* of a language L is a device that generates all of the grammatical sentences of L and none of the

ungrammatical ones. A sentence is a sequence of elements, finite in length, constructed from a finite set of elements.

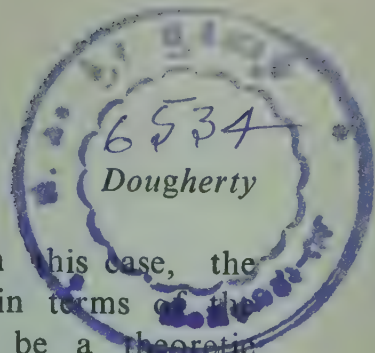
- (c) *Methods* are required to justify the grammar. The linguist must 'invent' new grammars and test them against existing grammars. Theory construction and hypothesis testing are the main tools to achieve rational progress. Hypothesis testing is a general method employed to choose the superior grammar from a field of alternative grammars which make conflicting claims about a given range of data. The method requires the alternative grammars to be compared with each other and with the data.

Whether we work in framework 18 or 19, there is only one way to justify a theoretical term: (1) show that some theory incorporating that term provides a revealing explanation for some interesting range of phenomena, and (2) show that the theoretic term plays a crucial role in the explanation.

What we consider to be a significant problem and what we regard to be a revealing explanation will depend on our view 18 or 19.

If we accept view 18, then Postal's diagnostic environments 7 and 8 have theoretic justification since they play a crucial role in the classification of surface structure. Postal's discovery 11 has theoretic significance since it indicates that distributional similarities exist between the strings *he*, *she*, etc. and the strings *the boy*, *the man*, etc. Similarly, since classification is a goal in view 18, it is a reasonable theoretic task to set about to classify verbs according to their possible range of surface structure complements. If the terms *agent*, *instrument*, etc. play a role in specifying diagnostic environments to define the surface structure complements, then, to the extent they define the diagnostic environments, they play a crucial role in the theory and are justified. To achieve the goals of view 18, no rules are required.

If we accept view 19, then procedures of segmentation and classification defined on surface structure strings are irrelevant to achieving our goals. We will attempt to invent systems of rules which can assign structural descriptions to surface structures. Postal's surface structure substitution tests 7-8 and his discovery 11 have no theoretic significance in a generative framework. In this view, classification for its own sake has no importance. If the classifications emerge naturally from the operations of specified rules,



then the classifications have some significance. In this case, the classes would be generatively defined, i.e. defined in terms of the rules which generate the language. It would not be a theoretic problem to set about to classify verbs according to their range of surface structure complements, although one might do it as an engineering problem. The result will be on a par with the rhyming dictionary, thesaurus, etc. Just as the case grammarian can maintain that his classifications have universal significance and reflect properties of mind, so too, Roget, or a living advocate of the thesaurus, could maintain that Roget's classifications, *space*, *time*, *movement*, etc., have universal significance and reflect properties of mind. In neither case, however, are we any closer to narrowing our definition of 'possible human language'. Classifications like Fillmore's case grammar, Roget's thesaurus, etc. might be interesting and useful as tools for someone who is constructing a generative grammar, but they have no theoretic significance in view 19, generative perspective.

3. More 'generative taxonomy'. The classification of strings with respect to their distribution in surface structure can be achieved by surface structure slot-filler tests, as in Postal 1966, or in terms of co-occurrence restrictions between the strings to be classified and other strings in surface structure. I illustrated how Postal 1966 uses slot-filler tests to establish constituent structure. Turning to the work of other generative semanticists. I can illustrate another device of taxonomic methodology. Lakoff and Peters, and McCawley 1968 employ surface structure co-occurrence tests to decide constituent structure.

The formulation of the conjunction reduction hypothesis offered by Lakoff and Peters, henceforth L&P, contends that there are two classes of conjoined structures, *sentence conjunction* and *phrasal conjunction*, characterized as follows:

- (8) (a) John and Mary left together.
 - (b) Shakespeare and Marlow wrote plays together.
 - (9) (a) John left with Mary.
 - (b) Shakespeare wrote plays with Marlowe.
 - (10) (a) Both John and Marlowe wrote plays.
 - (11) (a) John left and Mary left.
 - (b) Shakespears wrote plays and Marlowe wrote plays.
- The *together* and *with* phrases (8) and (9), indicate underlying phrasal conjunction, the *both* and the full sentence paraphrases, (10) and (11), indicate underlying sentence conjunction. (p. 115)

McCawley presents a grammar of co-ordination which differs from L&P's version of co-ordination reduction. Both proposals agree that there are two classes of co-ordinate conjoined structures, but they differ in how they characterize those two classes. McCawley 1968 offers the following definition of the two types of co-ordinate structures :

[I will] subcategorize noun phrases which have set indices [i. e. co-ordinate NP's and plurals, RCD] into two types, which I will call *joint* and *nonjoint*. Joint noun phrases allow adjuncts such as *together*; nonjoint noun phrases allow adjuncts such as *each*. Attached to each set index in deep structure will be a specification of [+joint] or [--joint]. Some verbs allow only a nonjoint subject, for example. *erudite*: some allow either a joint or a nonjoint subject, for example *go*: and some allow only a joint subject, for example, *similar*. (p. 152)

McCawley's grammar and L&P's grammar do not offer the same bifurcation of the co-ordinate conjoined structures. The feature [+joint] and the notion *phrasal conjunction* are defined in terms of co-occurrence with the element *together*, but McCawley defines [--joint] in terms of co-occurrence with *each* and the notion *sentence conjunction* is characterized by co-occurrence with *both*.

What is the significance of these surface structure co-occurrence tests which decide constituent structure ?

If we are working in a generative framework like 19, although the definitions differ, this is not relevant in choosing between the two hypotheses because (1) L&P present no rules or generative mechanisms to generate sentences containing the elements *together* and *both*, and (2) McCawley presents no rules or devices to generate sentences containing the elements *together* and *each*. Neither proposal incorporates any rules to indicate how the elements *each*, *together*, and *both* play a role in a generative grammar of co-ordinate conjoined structures, nor does either paper include any indication of how these elements are to be inserted into a sentence.

In a generative framework like 19, what is the value of such definitions in terms of surface structure cooccurrence properties? Considering that McCawley presents no generative grammar of the elements *together* and *each*, and that the relation 'is allowed as an adjunct' is not defined in his paper, it is unclear what bearing McCawley's definitions have in a generative framework. Also, since L&P present no generative grammar of the elements *together* and *both*, the value of their definitions remains obscure in a generative

view. The different definitions seem to have no substantive bearing on the choice between the two alternative hypotheses.

If we are working in the taxonomic view 18, then the difference between L&P's definition and that of McCawley is a substantive issue since the goal of research is classification. A basic aim of research is to devise and perfect surface structure tests, like these cooccurrence tests, to achieve an optimal classification of elements. I leave it to McCawley, L&P, Postal, and Fillmore to clarify what an optimal classification of elements might be. In the taxonomic view 18, co-occurrence tests, like those devised by L&P and McCawley, have great theoretical significance.

4 Summary and Kuhn-Mao analysis. Generative semantics can be thought of as the results obtained by Postal, Fillmore, and others who applied the methods of pregenerative (taxonomic) linguistics, listed in 1 and 18, to justify taxonomic grammars which have a generative flavor. To justify GS formulations, procedures of segmentation and classification are used by Postal 1966, Fillmore 1966, 68, L&P, and McCawley 1968, to devise surface structure substitution or cooccurrence tests. Some GS theorists, Postal 1966: p. 219, consider evidence revealed by surface structure substitution tests to provide direct insight into underlying forms. Postal excitedly tells us: [In sequences like *we men*, *we policemen*] we actually find the so-called pronouns *we/us* and *you* as articles in the *surface structures*. And this is among the strongest evidence for our overall claim that so-called pronouns have essentially the same type of derivation and status as traditionally recognized definite articles. Apparently, Postal feels that since *we*, etc. are articles in the surface structure, at least according to his diagnostic environments, then this is crucial evidence that the pronouns are articles in underlying forms. Postal is inconsistent in that he advocates taxonomic methods in deed but not in conscience.

Using surface structure substitution tests and placing heavy reliance on surface structure distributional information to indicate underlying forms, Postal is led to several discoveries about English:

(20) The personal pronouns *he*, *she*, etc. can be substituted into the slots in 7, but not into the slots in 8, and therefore pronouns are to be included in the Bloomfieldian form class: *Definite article*.¹²

(21) 'I am definitely claiming that were it not for this highly restricted and low level rule [Pronoun deletion, a rule never presented in his paper, RCD] our so-called pronouns would in fact have the terminal forms **Ione*, **usones*,

**heone, *itone* (or perhaps better **ithing* analogous to the indefinite something).' (p. 212-3)

- (22) 'It is a minor, more or less morphophonemic fact that we do not say things like **he boy, *she girl who I like, etc.*' (p. 217)

The range of data which Postal 1966 discusses from a taxonomic methodological point of view is discussed from a generative point of view by Delorme and Dougherty, and by Dougherty (1972). In the taxonomic view 18, Postal's discoveries may or may not be nuggets of gold. In the generative perspective 19, they are assayed as pyrites.

Fillmore's case proposals are isomorphic, i. e. identical in structure and appearance, with the results a taxonomist would obtain if he set about to classify verbs according to their range of surface structure complements. Fillmore's terms *agent, instrument, etc.*, like Roget's terms *space, time, etc.*, have no clear theoretical significance in a generative view, but they do in the taxonomic view.

Consider the generative view 19. When we ask for the justification for the terms *agent, instrument, etc.* as in Fillmore 1966, 68, we must formulate the question thus: (1) Does Fillmore present a generative system of rules which assigns notations to sentences and which describes interesting phenomena? And, (2) Do the terms *agent, etc.* play a role in these descriptions? The answer to these questions is no. Fillmore has given no rules to generate sentences, and therefore, has presented no justification for the terms *agent, etc.* These terms have no theoretic significance in the generative view.

This is not to say that Fillmore's case studies are not intrinsically interesting, nor that they might not prove useful. One must be aware, however, that it is a category mistake to compare Fillmore's case grammar with a generative grammar like the *Aspects* model. Fillmore's work is an example of the pregenerative view 18, a taxonomic classification of verbs according to their range of surface structure complements. *Aspects* is an example of the generative view 19, an attempt to generate the well-formed sentences of a language.

Fillmore's work is, on a theoretic level, to be compared with other works of the taxonomic perspective: *Webster's Third International Dictionary, Roget's Thesaurus, Whitfield's Rhyming Dictionary, etc.* Just as *Roget's Thesaurus*, a taxonomic classification of elements according to meaning, may be useful as a research tool to provide examples to a linguist seeking to offer justification for a

generative system of rules, so too, Fillmore's case grammar, a list of verbs classified according to their complements, might be interesting and useful.

One last point. Maclay presents the GG-GS controversy in a Kuhnian revolution-of-science perspective. See Kuhn 1962. Maclay states: 'The remarks in Lakoff (1971:232, fn. a) describing the development of generative semantics sounds very much like Kuhn's description of the period when an established paradigm is coming under attack for its failure to solve legitimate problems.' (p. 178)

I believe that such reference to Kuhn is misleading. Kuhn's analysis of revolutionary change is quite narrow, see Mao, Guevara, Marcuse, and Marx. Kuhn discusses revolutions, but what about counter-revolutions? The underground? The fellow travelers? Could there be a revolution in methods, but not in theories? Or vice versa? Could a revolution proceed in steps, each step being attained as the revolutionaries gain a more solid understanding of the new perspective? Consider these steps: First theoretical terms are accepted, then theories, then methods. What about the distinction between (a) what a researcher actually does and (b) what he claims he is doing? This is a crucial question, for insofar as there is a distinction, we might suspect counter-revolutionary action. Let us apply these notions to linguistics. If Chomsky 1957 caused a revolution in linguistics, was there a counter-revolution? Is generative linguistics infiltrated by a counter-revolutionary underground? Consider this enlarged Kuhn an analysis.

Chomsky 1957 caused a revolution in linguistics and substituted generative goals, methods, and theories for taxonomic goals, methods, and theories. Various workers in the field were affected in various degrees.

Chomsky accepted the complete change and accepts generative goals, methods, and theories. I call his perspective *Generative grammar*.

Postal and Fillmore - based on what they do, not what they claim to be doing - accepted the terminology from generative theories, but they did not accept generative methods nor the notion of a generative theory as a set of rules to generate the well-formed sentences of the language. Their work demonstrates what Lakoff calls 'the methodology of generative grammar', but which I prefer to call the methodology of generative semantics. I call their perspective *Generative Semantics*.

In my modified Kuhn-Mao analysis, Postal and Fillmore are not presenting a new perspective. Representing the taxonomic underground, they are leading a Bloomfieldian counter-revolution to reinstate taxonomic methodology. The fact that they pepper their taxonomic analyses with generative overtones serves to cloak their real position. Their true methodological allegiance becomes apparent if we evaluate them according to what they do and not what they claim to be doing. In the enlarged Kuhnian perspective, Postal and Fillmore can be considered as leading agents of the Bloomfieldian counter-culture. The solution, perhaps, is consciousness raising, but see fn. 13 for alternative treatments of the problem.

If, after trimming the facts to shape, we squeeze linguistic research into a Kuhnian perspective, we might be led to ask: What ever became of those linguists who were thoroughly trained in taxonomic methodology? Where are those old students who brought joy to the taxonomic hearts of their old masters? Where are the old students who, while suffering through a sequence of field methods courses, relentlessly pursued the phoneme from teepee to teepee applying consistently the methodology of segmentation and classification to establish substitution and co-occurrence tests to discover facts about distributional similarities of strings in the surface structure? What became of the students who, inspired by Webster and Roget, conceived of linguistic research as the compilation of lists of words grouped in various ways? Did these linguists suddenly, in 1957, give up methods and procedures by which they had for years sifted the primary data of English for such choice nuggets as 20-2? Did they suddenly in 1957 stop using slot-filler tests like 7, 8, and 12? If so, linguists and linguistics will be uniquely interesting for both philosophers of science and psychologists. Based on my knowledge of human nature, such a prompt transition seems unlikely. I would expect the transition from a taxonomic view into a generative framework to be gradual and piecemeal for those who, having out their intellectual eyeteeth on Bloch, etc., were already permeated with methodology. I would expect that, during the weaning period, those taxonomists caught up in the 1957 revolution might first use the terms from generative theories in their taxonomic classifications. Next, they might accept the new types of theories. Conceivably, after gaining some facility with the rules, they might eventually start to use generative methodology themselves.

But what is the value of such speculations? I am a linguist not a psychoanalyst. Personally, I set little stock in Kuhn's analysis for several reasons, not the least of which is: It is too narrow in

revolutionary perspective. In suggesting too simple answers to a complex problem (revolutionary change) it can be misleading.¹³

5. Conclusions. I have uncovered several cases where generative semanticists use the basic methodology of pre-generative (taxonomic) linguistics in their GS formulations:

- (23) Postal 1966, an article which methodologically is taxonomic from beginning to end—if we pay attention to what he does and not what he claims to be doing, uses surface structure slot – filler tests to discover distributional similarities between pronouns and strings like *the men*, *the girl*, etc. He uses slot-filler tests to pose problems about ‘distribution’ and to justify his solution to these problems. Evidence exists that the rules Postal alludes to could not be formalized in a transformational grammar, but could conceivably be written in Harman’s 1963 system, see Delorme and Dougherty, and Dougherty (forthcoming). Postal presents no rules to generate sentences.
- (24) Fillmore’s case proposals 1966, 1968 are isomorphic to the results a taxonomist could obtain if he established slot-filler tests to classify verbs according to their range of surface structure complements. Evidence exists that Fillmore’s rules cannot be written since his assumptions, in a generative framework, are internally contradictory. See Dougherty 1970a, forthcoming. Fillmore presents no rules to generate sentences.
- (25) Lakoff and Peters 1966 and McCawley 1968 use surface structure cooccurrence tests to define constituent Structure. The cooccurrence tests are in terms of the elements *each*, *both*, and *together*. Neither analysis presents rules to generate sentences containing these elements.

To account for these facts I offer these two hypotheses:

- (26) These are four isolated cases of *Generative Breakdown-Taxonomic Relapse*, completely unconnected. The basic methods of generative semantics and taxonomy are completely different.
- (27) Generative semantics is the result of applying taxonomic methods to justify theories with a generative flavor, i. e. theories which use the terms from generative grammar, but which contain no rules to generate the well-formed sentences of a language. The goal of GS is to achieve a formulation which captures distributional similarities that

exist among strings. The distributional similarities may be defined by slot filler tests, by cooccurrence tests, by tests of synonymy, etc. To achieve the goals of GS (or taxonomy) rules are not required.

Returning to the problem posed in my introduction S1, in Maclay's analysis, Figure (1), no explanation is provided for facts 23-5. These are simply four isolated cases of *Generative Breakdown-Taxonomic Relapse, GB-TR*. My analysis, Figure (2), isolates the *GB-TR* virus and offers an explanation for facts 23-5. This data follows as a natural consequence of my hypothesis 27 that GS is actually the residue of taxonomic methodology. GS is not a viable contender to 'next step' after the *Aspects* model. GS is the backwash of the *Syntactic Structures* revolution. Examples 20-2 list some of the 'discoveries' dredged up by Postal 1966. GS is championed by those, like Postal and Fillmore, who still use taxonomic methods, but who accept the terminology of generative grammar.

As I pointed out in Dougherty 1970a, b, 1971, and forthcoming, where I isolate the carriers of *GB TR*, there is only one antidote to prevent an epidemic:

(28) Linguists must develop a more critical attitude.

The most crucial task for the teacher of linguistics is to enliven in the student a critical discriminating attitude, and to direct the formation and growth of this attitude so that, ultimately, the student will be capable of doing good independent work. It is the process of critical thinking, the methods of hypothesis testing, that must be communicated to the student. As linguistics develop a more critical attitude, there can be no doubt that many pseudo-problems which today command so much attention will be seen in their proper perspective.

FOOT NOTE

1. I would like to thank Evelyne Delorme, Michael Helke, Lewis Levine, and Kathleen Riordan for criticisms and suggestions on this paper in its various stages of evolution. I am indebted to Planet Earth, Inc. for their assistance.

2. The methodological and theoretical position defined in Chomsky 1957, 1965 is what I call *Generative Grammar*, see my example 19 in the main text. The methodological and theoretical position taken by Postal, Fillmore, Lakoff, McCawley, and Bach, see bibliography, is what I call *Generative Semantics*. I could have

called Chomsky's position *Generative Syntax* perhaps, but as my discussion unfolds, we shall see that my terminology is well-chosen.

3 Postal's substitution class would be called by Bloomfield a *form class*. The theoretical background for Postal's substitution tests and discovery procedures is provided in Bloch, Bloomfield, Halliday, Harris, Hockett, Lamb, Longacre, Pickett, and Wells. As an intraduction to the theory of diagnostic environments, i. e. slot-filler tests, Gleason is especially to be recommended since the accompanying workbook provides many challenging problems similar to Postal's.

4. See fn. 7 for a discussion of the theoretical status of Postal's grammar.

5. Being a firm believer that actions speak louder than words, I will pay close attention to the substance of the proposals. My strategy is to get beyond the words and look at the specific proposals, the arguments used to motivate them, and the types of criticisms generative semanticists offer of non-generative semantic formulations,

6. Not the least of the problems is the fact that many of the examples Postal cites as 'crucial justification' for his analysis are either counterexamples to it or are completely irrelevant to his discussion, see Delorme and Dougherty. A further complication is that Postal fails to consider reasonable alternatives and compares his unformulated rule-free analysis with a caricature of Jespersen's proposals about construction like *we men*, *we Yorkshiremen*, etc. Postal feels that Jespersen, perhaps inspired by a premonition of Chomsky 1957, would transformationally derive these constructions from underlying appositive relative clause constructions like *we, who are men*; *we, who are Yorkshiremen*; etc. This is the analysis which Postal shows to be incorrect. I would imagine, however, that Jespersen would have realized that a simple PS grammar would account for a wide range of constructions including the restricted range of data discussed by Postal. See Dougherty forth coming.

7. Do Postal's proposals constitute a generative grammar? Postal 1964 defines a generative grammar as follows.

'I...assume...that the minimal requirements for a grammatical description of a natural language that it describes precisely what the sentences of a language are and that it says precisely what structure each has. In other words, a grammar must be an explicit formal device which enumerates all and only the well-formed strings and which *automatically* [Postal's emphasis, RCD] assigns to each sentence a correct structural description (henceforth SD) showing

what elements the sentence contains, their relations to each other, the relations to each other, the relations of the sentence to other sentences, etc. ...

... Failure to automatically and uniquely assign SD to enumerated sentences means the grammar does not make clear what claims it makes about each sentence and thus denies the grammar of much of its testability.

Assignment of incorrect SD means that false claims are made about part of the subject matter. Failure to make the rules of the grammar explicit and precise makes it impossible to determine what sentences the grammar does or does not enumerate and just what structures it claims that these sentences have. To justify the extent of its imprecision, a grammar cannot be checked against empirical linguistic data.' (pp. 3-4)

If we go by these criteria, then Postal 1966 does not present a generative grammar since he has no rules to generate sentences and assign SD's. Furthermore, evidence exists that the rules cannot be formulated.

Lakoff states: '[In generative semantics] as in the case of generative grammar, the term 'generative' should be taken to mean "complete and precise"'. (p. 232, fn. a) According to these criteria, Postal has not presented a generative study.

Postal 1966 fits into the perspective I outlined in fn: 3. See especially Gleason, Hockett, and Lamb.

8. In fact, since evidence exists that Postal's rules cannot be formulated (Dougherty and Delorme), and since he does not seem to be working in a generative framework by his own or Lakoff's criteria, see fn. 7, this would seem to be the *only* way to interpret his use of rule names.

9. The notion that GS formulations are often juxtapositions of opposites can be carried over into an analysis of GS argumentation, see Dougherty and Dover. Frequently, the conclusions have no logical relations with the premises, the discussion, or the data. Consider some examples.

Lakoff and Peters, in an attempt to integrate the notion symmetric predicate into the grammatical model, present several arguments to choose between their grammar and Gleitman's 1965 analysis. Their data shows quite persuasively that Gleitman's grammar is superior to their own, but somehow, they conclude their grammar is superior to Gleitman's. See Dougherty 1971.

Consider some work inspired by GS research. Jacobs and Rosenbaum (J & R) 1968, a widely used textbook for introductory classes, incorporates a version of Postal's 1966 grammar. In an illuminating review of J&R, Watt points out that J&R's approach to defending the claim that pronouns are articles is to cite a counter example to the claim. 'J&R provide in defense of the "pronoun as article" claim the very analysis that Postal shows must first, if that claim is to stand, be overthrown.' (p. 197) By this device, J&R communicate to the beginning student both the substance and the flavor of Postal's article.

Watt's analysis lays bare the inconsistency in J&R's treatment of *we men*, etc., but does not indicate that the basic problem can be traced to Postal's article. In particular, Postal ignores constructions like *we*, *the men*; *I, a man*; etc. which J&R and Jespersen (see fn. 6) feel are related to *we men*.

10. A marking assigned to a lexical item to indicate how that item must behave with respect to a specific rule is called a *rule feature*. A rule feature may indicate that an item must necessarily undergo a rule, must not undergo a rule, must meet the structural index of a rule but not undergo it, etc. Dougherty forthcoming indicates limitations on their use.

11. This sketch is a simplified version of the generative perspective outlined in Chomsky 1957. I list only the items relevant to my discussion. See Chomsky 1957, 1965 for details.

12. The GS perspective was arrived at through an attempt on the part of such linguists as Postal...to apply consistently the methodology of transformational grammar to an ever-increasing body of data. Lakoff (p. 232, fn a) Postal 1970 consistently applies these methods to strings like *remind* and *strike like*. He discovers facts far more subtle than 20-2, but equally relevant to research in generative linguistics. See Gleason and the accompanying workbook for penetrating discussions of these methods.

13. The empirical adequacy of a revolutionary perspective would be judged by its ability to provide explanations for phenomena relevant to revolutions. Consider this bit of data.

Postal 1964 is one of the strongest anti-taxonomic, pro-generative diatribes to come from among the generative grammarians. Postal 1966 is ambidexterous: On the one hand, in substance and content, it is a purely taxonomic analysis boasting surface structure slot-filler tests and Bloomfieldian form classes. On the other hand,

in Postal's words and evaluation, it is in the forefront of generative research.

Kuhn's revolutionary perspective does not readily accommodate such a contradiction. Mao's revolutionary perspective has descriptive and explanatory mechanisms to deal summarily with such data.

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PĀṆINI'S THEORY OF KĀRAKAS

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Kurukshetra

Pāṇini introduces the notion of kāraka in 1423, kārake, "here follows a description of the kārakas." However, he nowhere offers a formal definition of it in his grammatical treatise, the *aṣṭādhyāyī*. The word kāraka is derived from the verbal root $\sqrt{\text{kr}}$ "do" by adding the agentive suffix ṇvul (=aka), meaning thus etymologically "one who does (karoti iti kārakam)". In his grammar he uses it as a technical term to denote anything that contributes toward the fruition of an action. In other words what causes or occasions an action is a kāraka. In the sentence *bhṛtyaḥ kūpād hastena rājñe pātre jalam ānayati*, "The servant brings the king water in the jar from the well by hand", the various objects expressed by nominals, contribute to the accomplishment of the act of "bringing". The above sentence may be thought of as verbal representation—a speech act describing an event happening in the real world outside. It is a complex event involving a series of actions such as the servant carrying a jar in his hand, walking towards the well, tying the jar to the one end of a long rope, dropping it into the well, drawing it up when filled with water and so on, ultimately culminating into king's getting the water. However, out of these several events only a few are represented in the speech act. The selection is strictly determined by what is the focus of the complex event, namely, "the act of bringing (water)" in the example under discussion. Thus whatever is conducive to the realization of "the act of bringing" is crucial and has to be noticed in verbal representation. Any adequate linguistic description of such a sentence will seek to define and state the various relationships obtaining between the act of "bringing" and the "things" involved. The servant (bhṛtya-) performs the activity, the king (rājan-) is benefitted by it, the hand (hasta-) is a means of carrying the jar, the well (kūpa) is the source of water, the jar (pātra-) is the object that holds the water and water (jala-) is the

thing desired to be carried. The activity is thus organized around the notion "bring (āni)" and whatever participates in its accomplishment is relevantly related to it. Such a relationship between "things" and "activities" when reflected in speech act is recognized as *kāraka* by Pāṇini. Such a relation will be precluded between "krośa" and *adhiṣi* "study" in *devadattaḥ krośam adhīte*, "Devadatta studies for a distance of one krośa. i. e., the time taken to travel one krośa." Nor is a *kāraka* relation recognized between *sukha-* "ease" and *gam* "go" in the sentence *devadattaḥ sukhena gacchati* "Devadatta walks with ease." A formal definition thus could be formulated as follows: the *kāraka* is the nominal stem standing in syntactic relation with a verbal stem.

What could be the maximum number of such relations in a language is an open question. Pāṇini conceives six¹ such relations for Sanskrit. In *kāraka* system, the position of an "activity" (linguistically represented by a verbal stem) is pivotal. These relations are spun around it. An "activity" entails a doer (*kartā*), one who performs it and a place, location (*adhikaraṇa*) where it is carried out. Besides some activities involve an instrument, a means (*karana*) with or by which it is accomplished most effectively. Others imply a goal, destination (*karma*) which is desired to be achieved through that activity by the agent; while some in addition may require a recipient (*Sampradāna*), one who is benefitted by it. Some "activities" however, denote mere separation, recession (*apādāna*) of an object from another. All these relations are illustrated in the example given above.

1. Pāṇini's bases of characterization of *kāraka* relations

Even a very superficial examination of the data of a natural language will convince any one that the system underlying it is not all too neat and clean. A linguist struggling to discover an altogether consistent and logical theory to explicate all facts of a language will be soon disillusioned to find that the facts of language are too complex to fit into the straight jacket of logic. Natural languages are products of diverse factors and appear as conglomerations of several subsystems. Pāṇini's characterization of *kāraka* relations palpably demonstrates the truth of this observation. He realizes that he could not proceed on the assumption that *kāraka* relations are capable of being characterized comprehensively by anyone of the various features such as linguistic, semantic, logical, etc. We shall attempt here to capture the considerations that weighed with Pāṇini while formulating the *kāra*kas as given in 1424-55. A closer examination of his statements does confirm that no single criterion,

linguistic or non-linguistic, is adequate enough to characterize (define) a *kāraka*. Thus he employs diverse criteria, drawn from total environments of the language. These appear to be in terms of the following:

(i) Natural relations between “things” and “processes”

To formulate *kāraka* relations Pāṇini brings into picture, besides other factors, the physical environments intended to be represented by linguistic units. In other words such a formulation reflects natural of inherent (logical) relations between “things” and “events” of the real world symbolized by linguistic expressions. In *vṛkṣāt paṇām patati*, “the leaf falls from the tree,” the nominal stem *vṛkṣa-* “tree” stands in *apādāna* (ablative) relation with the verbal stem *√pat* “fall”. But mark Pāṇini’s formulation He states? “The fixed one in relation to the act of recession is the *kāraka* called *apādāna* (1424).”² It is visibly expressed in terms of “things” and “processes” occurring in the physical world rather than in terms of linguistic units. The *dhruva*, “fixed”, is the “thing” *vṛkṣa*, “tree” outside in the courtyard rather than the linguistic item *vṛkṣa* in the lexicon. Similarly *apāya* “recession” is an “event” taking place in the nature rather than the verbal stem *√pat* “fall” recorded in his verbal lexicon. Pāṇini was aware of it as much as we are. But by formulating his characterization of *apādāna* in the above manner he gives recognition to the fact that language does not function in a vacuum in the closed system of its units. It is intimately and intricately associated with the objects, physical and non-physical, it seeks to represent. And in some cases, as in the present example, it simply pictures the events of the outside world. Thus a meaningful study of its system cannot be divorced of its environments. Pāṇini therefore justifiably conceives the syntactic relation between two linguistic units in terms of “things” and “processes” of the world of nature when the latter are faithfully mirrored in language.

His characterisation of other *kāra*kas is also worded in similar terms. The thing approached (by the *kartā*) by means of *karma* is the *kāraka* called *sampradāna* (dative case) (1432);³ e.g. *brāhmaṇa-in devadatto brāhmaṇāya gām dadāti* “Devadatta makes a gift of a cow to the *brāhmaṇa*.” The thing which is the most effective means of accomplishing (the act) is the *kāraka* called *karaṇa*⁴ (1442); e.g. *paraśu- “axe” in devadattaḥ parśunā kṣāṭham chinatti* “Devadatta splits wood with an axe.; The locus (where an activity takes place) is the *kāraka* called *adhikaraṇa* (1445)⁵; e.g. *bhūmi “ground” in devadatto bhūmau śete* “Devadatta lies on the ground”. The thing

most desired of the kartā is the kāraka called karma (1449)⁶; e.g. devadattaḥ dugdham pibati "Devadatta drinks milk". The self-prompted one (in performing an activity) is the kāraka called kartā (1454)⁷, e.g. devadattaḥ hasati "Devadatta laughs".

It may be noticed that the notions "thing" and "process" are extended to include their figurative use also. Thus the same syntactic relations are assumed to obtain between such abstract concepts as "truth", "resolve", "mind" etc. and the various "activities" involved. For instance anṛta- "untruth" and satya- "truth" are treated as apādāna (ablative) and karma (objective) respectively in idam aham anṛtāt satyam upaimi "here I approach truth (moving away) from untruth. In nyāyyāt patho na vicalanti dhīrāḥ "The men of fortitude do not swerve from the path of righteousness"; pathin- "path" is apādāna. Again manas- "mind" is adhikaraṇa (locative) in na mama manasi kiñcit tiṣṭhati "There is nothing in my mind", and so on.

However, such kāraka relations would be considered to hold good even though the actual attendant circumstances have not been realized; these are simply anticipated. For instance in the sentence brāhmaṇo nṛpād gām yācate "The brāhmaṇa ask a cow from the king," nṛpa- "king" holds apādāna (ablative) relation with yāc "ask for", although no actual transfer of cow has taken place from the king to the brāhmaṇa. Mere "request" does not cause "recession", apāya, which is the necessary condition of apādāna relation. The king may or may not ultimately decide to give over a cow to him. There is "recession" only when the king actually hands over the cow requested for.⁸

It may be maintained that a characterization based on inherent relations between "things" and "processes" in nature is language independent and may constitute a language universal.

II Semantics

Pāṇini notices that the above characterization is not adequate enough to account for all the facts of the language. He needs to seek some other basis to encompass them. He thus introduces several other criteria in his attempt to achieve total accountability of linguistic data, which in any case, is the minimum and legitimate demand on a linguistic theory. He next turns to meaning. He recognizes appropriate semantic categories to establish kāraka relations in certain environments. In relation with the verbal stems meaning "fear, protect, etc. the source of fear is the kāraka called apādāna (1425)⁹" e. g. vṛka- "wolf" in vṛkāḍ bibheti "he fears the wolf"

and caura- "thief" in caurebhyo rakṣati, "he protects (him) from thieves". Likewise, "the desired object is in apādāna in relation to the verbal stems meaning "ward off" (1427)¹⁰; e. g. yava "barley" in yavebhyo gām vārayati, "he keeps off the cow from the barley field". "The person whose sight one wishes to avoid is called apādāna (1428)¹¹; e. g. upādhyāya- "teacher" in upādhyāyān niliyate, "he avoids the sight of the teacher, i. e. does not wish to be seen by the teacher." Also, "the teacher is apādāna in relation to the verbal stems signifying "regular teaching" (1429)¹²;" e. g. upādhyāyād adhīte "he receives regular instructions from a teacher". Similarly, "in relation to verbal stems meaning "like" one that is being pleased is called sampradāna (dative) (1423)¹³;" e. g. devadatta- in devadattāya rocate modakāḥ, "the sweet-ball pleases Devadatta, i. e. Devadatta likes sweet-ball." "The verb/sprh "desire" governs sampradāna of the thing desired (1436)¹⁴;" e. g. phalebhyāḥ spṛhyati, "he longs for fruits". "In relation to the verbal stems meaning" "be angry, injure, envy and detract", the person against whom anger (etc.) is directed is called sampradāna (1437)¹⁵;" e. g. devadatta- in devadattāya krudhyati "he is angry with Devadatta."

There are, however, some verbs that have more than one meaning and only in one specified meaning they govern a particular kāraka relation. For instance, "in case of the verbal stem prā√ji "be fed up, tired of" that which is unendurable holds an apādāna relation with it (1426)¹⁶;" e. g. adhyayana- "study" in adhyayanāt prājayate", he is fed up with study". However in other meanings it governs a karma kāraka as in śatrūn prājayate," he conquers the enemies". Similarly, "the material source (cause) of the kartā of the verbal stem √jan-b'e born' and the source in case of the kartā of pra-√bhu "originate" govern apādāna kāraka (1433-31)¹⁷;" e. g. gomaya- 'cowdung' and himālaya- 'the Himalayas' respectively in the following examples, gomayād vṛścikā jāyante, "cowdung breeds scorpions" and himālayād gāṅgā prabhavati, "the Ganges originates from the Himalayas". The one who is intended to be informed holds sampradāna relation with the verbs √slāgh "praise", √hnu "hide from", √sthā "wait for" and √śap "curse" (1434)¹⁸; Examples are: devadattāya slāghate, "he praises Devadatta and wishes that Devadatta should know of it." If such a wish is not intended on the part of the kartā then the person praised holds karma relation. Thus devadattam ślāghate would simply mean "he praises Devadatta." Likewise, sā devadattāya tiṣṭhate "she waits for Devadatta and wishes that Devadatta should know of it." The verb √dhṛ "owe" governs sampradāna relation of the creditor (1935)¹⁹; and √rādh "propitiate" and √ikṣ "look to" of the person about whom questions

are asked (1439)."²⁰ For instance, devadattāya satam, dhārayati, "he owes one hundred (rupees) to Devadatta", otherwise, aham tava adeṣam śirsā dhārayāmi, "I carry your order respectfully on my head", devadattāya rādhyati, "he wishes Devadatta good"; devadattāya ikṣte "he inquires about the welfare of Devadatta", otherwise, devadattam ikṣate "he sees Devadatta".

There are certain verbs that optionally govern two kārakas. "The verbal stem √div "gamble" governs karma or karaṇa optionally of the thing that is the best means in the accomplishment of the action (1443)"²¹ e.g. akṣair dīvyati or akṣān dīvyati "he plays dice or with dice." Similarly the verb pri √krī "hire on wages, employ" govern instrumental or sampradāna of the person employed (1444)"²² e.g. śatāya or śatena parikrītaḥ "he was hired for a hundred, i.e. to work off a hundred (rupee debt)."

The above is not an ad hoc list of kāraka relation. This is strictly in conformity with the facts of the language. Later statements in his grammar will bear it out. (For details, see 1 (v) and (5).

iii Grammatical Categories

The semantic criteria described above, however, does not encompass the facts of the language. For instance, "The person against whom anger (etc.) is expressed is called karma in relation to the verbal stems krudh 'be angry' and drub 'injure' if these are preceded by verbal prefixes (1438)."²³ Thus we have devadattāya krudhyati, but devadattam abhikrudhyati, "he is angry with Devadatta". To express the same semantic notion Pāṇini recognizes two different kāraka relations. Likewise, "in case of the verbal stems √śī "lie down", √sthā "stand" and √ās "sit", preceded by verbal prefixes adhi' √viś 'enter' by abhi-ni and √vas "dwell" by upa, adhi and ā, the locus is called karma (1446-48)."²⁴ Thus to describe the situation "Devadatta lies down on the ground", the nominal bhūmi- 'ground' occurs in adhi-karaṇa (locative) or karma (objective) depending on whether the verb √śī "lie" is employed by itself or is preceded by adhi, etc. We have thus accordingly devadatto bhūmau śete or devadatto bhūmim adhiśete.

In the above examples, it is evident that the verbal prefixes, though not affecting the semantic structure of the verb, bring about syntactic realignment. Now a noun associated with these verbs will be subjected to the operation of all the rules that apply to a karma. The fact the conditions this change is the grammatical category of the verbal prefixes, upasarga. Thus kāraka reassignment in the above instances has a grammatical basis.

iv Co-referential elements in discourse

Pāṇini recognizes that sequential occurrence of sentences in a discourse may affect their syntactic structure. For instance in *nṛpo brāhmaṇāya gām pratisṛṇoti* "the king promises a cow to the brahmaṇa", the *sampradāna* (dative) relation between the nominal stem *brāhmaṇo nṛpam gām yācate* "the Brahmana ask the king for a cow." Pāṇini's formulation of the rule describing the use of *sampradāna* in the above example is based on an explicit understanding of such a sequential relationship. He states: "The *kartā* of the preceding (sentence) holds *sampradāna* relation with the verbal stem $\sqrt{\text{śru}}$ -preceded by *prati* or *ā* in the meaning of "promise" (1440)".²⁵ And likewise, "in case of the verb $\sqrt{\text{gr}}$ with *anu* or *prati* meaning "encourage by speaking after i. e. repeating", the *kartā* of the previous (sentence) will hold *sampradāna* relation (1441)".²⁶ e.g. *devadattor hotre pratigrṇāti* or *anugrṇāti* "Devadatta repeats after the priest to encourage him." Such a sentence presupposes an utterance like *hot ā girati*, "the priest chants."

v Derivational Relations Among Sentences

Pāṇini derives certain constructions from underlying structures. Derivation in such cases entails structure. To illustrate this point, we may refer to Pāṇini's treatment of causals. The causal stems in Sanskrit are formed from simple ones by means of suffixation, e. g. *kārayati* > *kṛ-ṇic-ṣap-ti*²⁷ "he causes to do"; *gamayati* < *gam-ṇic-ṣap-ti* "he causes to go" (*ṇic*=i, *ṣap*=a). Causal sentences are derived from corresponding non-causal ones by effecting certain structural changes. The grammatical subject of the causal is called *hetu* 'causer' by Pāṇini (1455).²⁸ But for the purposes of denoting syntactic relations it is treated as *kartā* and all the rules that apply to *kartā* at syntactic level are applicable to *hetu* also. Thus in a causal sentence *hetu* "causer" will hold the *kartā* relation with the causal verb. The *kartā* of the non-causal verb is no longer now related grammatically to the causal form. In the causal sentence thus it is represented by the 3rd *vibhakti* (case suffix) which denotes a *kartā* or *karaṇa* which has not been already expressed by a grammatical element (2318).²⁹ From *devadattaḥ patram likhati* "Devadatta writes a letter", is derived the causal *viṣṇudatto devadattena patram lekhayati*, "Viṣṇudatta causes Devadatta to write a letter." The *hetu* "causer" here occurs in the 1st *Vibhakti*, since it is already expressed by the verbal form *lekhayati*, while the *kartā* of the non-causal sentence occurs in the 3rd *vibhakti*. This is the normal situation. But there are certain exceptions to this general rule. Dealing with these Pāṇini states that "the *kartā* of the non-causal verb meaning

motion, comprehension, eating or having *śabda* (sound or literary composition) as their object (*karma*)' and intransitive verbs) becomes *karma* in causals (1452)³⁰. Here the syntactic relations in non-causal sentences form bases of syntactic relations in causals. Thus *devadatta āste* "Devadatta sits down" > *viṣṇudatto devadattam āsayati* "Viṣṇudatta makes Devadatta sit"; *śiṣur dugdham pibati* "the child drinks milk" > *Jananī śiṣum dugdham pāyayati* "mother makes the child drink milk." However, "in case of \sqrt{hr} 'carry' and \sqrt{kr} 'do' there is an option (1453)³¹; e. g. *devadattaḥ kaṭam karoti* "Devadatta makes a mat" > *devadattena/devadattam kaṭam kārayati* "he causes Devadatta to make a mat." And later grammarians add several exceptions and counter exceptions to these rules of Pāṇini (see *Mahābhāṣya*, Rohtak, Vol. 2, pp. 429-335; *kāśikā* on 1452).

Restructuring of *kāraka* relations in the derived sentences is effected purely on formal bases. If Pāṇini had intended to define *kāraka* relations exclusively in terms of semantic features, he would obviously have no way of representing a *kartā* as *karma* in the above cases while allowing it to remain a *kartā* (to be represented by 3rd *vibhakti*) in other cases. Most obviously non-semantic considerations, namely grammatical transformations in the present case, forced him to recognize the non-causal *kartā* as *karma* in the above instances. Now the rules that apply to a *karma* will apply here also. We can have a *karma* denoted by verbal form in such sentences as *viṣṇudattena devadatta āsyate* < *viṣṇudatto devadattam āsayati* < *devadatta āste* "Devadatta sits"

vi Inadvertant Association of a Nominal with a Verbal

The *karma* is characterized as the thing most desired of the *kartā* (1449). But sometimes the *kartā* may inadvertently or incidentally happen to come by something which he never intended to achieve through his efforts. In such circumstances, the thing, though never consciously desired by the *kartā* but nevertheless incidentally accrues to him, has in reality been affected by his action in the same manner as the one desired to be obtained. Grammatically thus it also comes to hold the *karma* relation with the verb (1450):³² For instance, one wishing to eat rice happens to eat poison by sheer inadvertance or for the reason that poison is mixed in rice. In such a case "poison" undergoes all the processes (grammatical and non-grammatical) denoted by "eating", viz., of being lifted with hand, put into mouth, masticated, swallowed, etc. The way poison, an undesired object, is affected by the action affecting "rice", an object so fondly desired. Thus *viṣa*-*"poison"*-though *anīpsita*, "undesired" is treated as *karma* in *devadatto viṣam khādati* "Devadatta takes

poison though he never intended it", or *odanam khādan devadattor viṣam khādati* "Devadatta wished to take rice but instead takes poison inadvertently. "Likewise, *grāmam gacchan tṛṇāni spṛṣati*, "on his way to the village he treads over (touches) the grass. Here *tṛṇa* "grass" was never intended to be the goal of his activity. Incidental association with the activity, however, entitles it to be treated as karma.

(vii) Linguistic Usage

While enumerating characterizations of karma *kāraka* Pāṇini observes that "a *kāraka* relation not (expressly) stated (in a sentence by the appropriate *kāraka*) is treated as karma (1451)".³³ This, however, does not imply that any *kāraka* relation when suppressed could be represented by karma. Pāṇini's statement is so cryptic that practically it tells nothing. His commentators have, however, made it explicit by providing a list of verbal stems in case of which the observation holds good (*Mahābhāṣya*; Rohtak, Vol. 2, p. 413 ff.; *kāśikā* on 1451) From the examples cited by the commentators we can reasonably interpret *akathita* "not expressed" as a covering term for *apśdāna*, *sampradāna* and *adhikaraṇa* which are alternatively expressed by karma in case of the verbs listed therein. Here the optional use of karma is solely determined in terms of the linguistic usage. For instance, in the sentences *putram brūte dharmam* "he explains dharma to his son"; *mānavakam panthānam pṛcchati*, "he asks the boy the path"; and *anvavarūṇadhi gām vrajam* "he confines the cow in the pen", the nominal *putra*- "son", *mānavaka*- "boy" and *vraja*- "pen" are originally *sampradāna*, *apādāna* and *adhikaraṇa* respectively (cf. *Mahābhāṣya*, Rohtak, Vol. 2, pp. 416-7).

It may be noticed here that not all *akathita* karmas, i. e. the indirect objects, described above, are treated alike in other grammatical constructions, say for example, in forming passive constructions. We have *dhenuḥ payo duhyate* "the cow is milked of its milk" < *dhenum payo dogdhi*, but *ajā grāmam niyate* "the goat is led to the village" < *ajāṁ grāmam nayati*. In case of the first sentence *dhenu*-the *akathita* karma is denoted by the passive verbal form while in the second sentence *ajā*- the non-*akathita*.

To sum up: the *kāraka* relations are characterized by Pāṇini in terms of (i) natural relations between "things" and "processes", (ii) semantics, (iii) grammatical categories, (iv) co-referential elements in discourse, (v) derivational relations among sentences, (vi) inadvertent or incidental association of a nominal with verbal activity and (vii) linguistic usage.

2. Linguistic representation of kārakas

It follows from the above interpretation of Pāṇini's formulation of kārakas that he has no one uniform criterion to characterize them. What is subsumed under a particular kāraka ends up as being of heterogeneous nature. He lists for instance *eight* characterizations of apādāna to which kātyāyana adds one more.³⁴ These characterizations, as hinted earlier, fall into two broad groups, viz. (i) those which are language independent, and (ii) that are language specific. If the analysis presented here is correct then it won't be wholly correct to maintain that "Pāṇini arrived at his categorization on the basis of formal grammatical analysis..."³⁵, nor to assert that Pāṇini's definitions of kārakas are set up exclusively on the semantic level.³⁶ We have endeavoured to establish that his bases of categorization are manifold; including both formal and semantic ones.

The notion of kāraka plays a vital role in the overall linguistic theory of Pāṇini. It will indeed be interesting to investigate what linguistic considerations motivated Pāṇini to set up such a concept. Before we address ourselves to this task we shall attempt to discuss how kārakas are represented linguistically.

The kāraka relations are essentially abstract syntactic relations between nominal and verbal stems. At syntactic level, these are largely denoted by inflectional endings attached to these stems and only in some cases by what are called derivative suffixes. For instance in *chātro vedam adhīte* "student studies the Veda," the verbal ending *-te* denotes kartā, while karam is expressed by the nominal ending *am* attached to *veda-*. In *chātreṇa vedo dhītaḥ*, "the veda is studied by the student," the primary derivative suffix (*kṛt*)-*ta* added to the verbal stem *adhiṣi* "study" expresses karma, while kartā is denoted by the nominal ending *-tā*(=*ina*) added after *chātra*. At morphological level, i. e. in derived nominal stems, the kāraka relations are expressed by primary (*kṛt*) and secondary (*taddhita*) suffixes and by compound formation. For example in *śrotr-* "one who listens" primary suffix-*tr* added to the verbal root */śru-* "listen" expresses kartā. Similarly in *tatkṛta* "done by him" the compound construction expresses the kartā. In analytical constructions, however, these relations will be expressed by verbal and nominal endings e. g. *śro-tr-* is derived from *śṛṇoti yaḥ* "one who listens", where *-ti* expresses the kartā and *tatkṛta-* from *tena kṛtam* where 3rd vibhakti in expresses kartā. In such a sentence as *śrotā svapiti* "the listener sleeps", there are in fact two karta relations, one with regard to *√svap* "sleep" and another in relation to *√sru-* "listen". Pāṇini has described such

phenomenon accordingly. Thus representation of *kāraka* relations by inflectional endings on the one hand and by derivative suffixes and nominal compound constructions on the other differ significantly. In case of the former the output is a syntactic construction, while in the latter it is a morphological one. The underlying input, however, in both the cases is the same, i. e., an abstract syntactic construction.

With these preliminary remarks we now propose to deal with *kāraka* representation in greater detail below :

(a) Representation by nominal endings :

There are seven sets of nominal endings.³⁷ Each set is a triplet signifying three numbers, namely, singular, dual and plural. However, there are only *six* *kāraka* relations to be represented by them. Obviously there is no one to one correspondence. Besides, as we shall demonstrate below a particular *kāraka* may be represented by more than one *vibhaktis* or conversely a *vibhakti* may express more than one *kāra*kas. Pāṇini enunciates that “*kāraka* relations in a construction are expressed by *vibhaktis* in case these are not already represented by any other linguistic element (231).”³⁸ If a *kāraka* relation has already been expressed by any other device, the *vibhakti* even though occurring with the nominal will be emptied of its function of denoting a *kāraka*. The 1st *vibhakti*, for instance never expresses any *kāraka* relation (see ff2 (b)). Representation of *kāra*kas by *vibhaktis* is described by Pāṇini in 232 ff. Thus *karma* is denoted by 2nd *vibhakti* (232);³⁹ e. g., devadattaḥ kaṭam karoti “Devadatta makes a mat”.; *sampradāna* by 4th (2313);⁴⁰ e. g. nṛpo brāhmaṇāya gām dadāti “the king gives a cow to the brāhmaṇa”; *kartā* and *karaṇa* by the 3rd (2310)⁴¹, e. g. devadattena vedaḥ paṭhyate “by Devadatta is studied the Veda”; devadattaḥ paraśunā vṛkṣam chinatti “Devadatta cuts the tree with an axe”; *apādāna* by the 5th (2328),⁴² e. g. vṛkṣāt patram patati “the leaf falls from the tree;” and *adhi-karana* by the 7th (2336),⁴³ e. g. devadatto bhūmau śete “Devadatta lies on the ground.”

The 3rd *vibhakti* in the examples given above represents *kartā* and *karaṇa*. Similarly the 4th *vibhakti* represents *sampradāna* (see above) and also *karma* of a verb not expressed and which has in construction therewith another verb denoting an action performed for the sake of another action (2313);⁴⁴ e. g. phalebhyo gacchati “he goes for fruits.” Thus the 3rd and 4th *vibhaktis* denote two *kāra*kas each.

We may now give a few examples to illustrate that a particular *kāraka* is represented by several *vibhaktis*. The *karma* for instance,

is expressed by the 2nd (232) (for examples see above), by the 3rd (2322), e.g. *mātrā samjānīte* "he recognizes his mother," by the 4th (231214), e.g. *grāmāya vrajati* "he goes to the village", and by the 6th (3252-61), e.g., *mātuh smarati* "he remembers his mother." Similarly *karaṇa* by 3rd (2318), 5th (2333) and 6th (2350,63) respectively in the following sentences: *aham aśvena yāmi* "I go on a horse", *kṛccrāt/kṛcchreṇa gacchati* "he can barely walk"; *madhuno jānīte* "he proceeds (to perform the sacrifice) with honey."

Such representations of a *kāraka* by two or more *vibhaktis* should however, be distinguished from *vibhakti* representation of optional *kāraka* relations (by definition) For instance, in the case of *√div* "gamble", the most effective means is optionally *karaṇa* or *karma* (1443) and these are to be represented by 3rd and 2nd *vibhaktis* respectively by 2318 and 232. We have thus *akṣaiā/akṣān divyati* "he plays dice or with dice" Pāṇini, in such a case, does not concede that the same *kāraka* relation, *karaṇa* here, is represented optionally by the 3rd and 2nd *vibhaktis*, as he does for instance, in the case of */hu* "sacrifice" (233) where *karma* is represented by 2nd and 3rd *vibhaktis*. The reason is not far to seek. If *akṣān* in the above example is merely 2nd *vibhakti* representing *karaṇa* and not one representing *karma*, then the passivization rule (3469) according to which only *karma* and not any other *kāraka* is denoted by the verbal ending, will not be operative. We have no way to generate the correct form *akṣā divyante*.

It may also be noted that the *kāra*kas do not exhaust the *vibhakti* use. The *vibhaktis* also express non-*kāraka* relations i.e., relations between nominals and non-verbals. Thus a dichotomy of *kāraka vibhakti* and *upapada vibhakti* (non-*kāraka* representation by *vibhaktis*) is recognized.

(b) Representation by verbal endings.

Pāṇini speaks of representation of *kāraka* relations by verbal endings. Besides denoting the categories of person, number, voice (*ātmanepada* and *parasmaipada*) and tense-mood, these express distinctions of *kartā* and *karma* in case of transitive verbal stems and *kartā* and *bhāva* (semantic notion denoted by the root) in case of intransitive ones (3469).⁴⁵ The verbal endings- *ti* and *-te* (both III person, singular, present tense, one *parasmaipada* and the other *ātmanepada*) denote *kartā* in *devo lokam sṛjati* "God creates the world" and *devadatta āste* "Devadatta sits" While *te* in *devena lokah sṛjyate* "By God the world is created" expresses *karma*, but in *devadattena āsyate* "it is sat by Devadatta, i.e., Devadatta sits"

it expresses only the state or action denoted by $\sqrt{\text{ās}}$ "sit". It maybe described as an impersonal construction. We may note that only kartā and karma are expressed by the verbal endings.

One may wonder why Pāṇini chose to make a departure from the general practice of making kāraka relations by nominal endings (a practice he has followed all along) in preference to representing these by verbal endings in the above cases. He could have as well formulated a sūtra like karṭṛ-karmaṇoḥ prathamā "to represent kartā and karma 1st vibhakti will be used". On surface it looks simple and straight forward. A little reflection will show that such a formulation would have been unique and directly in clash with karmaṇi dvitīyā (232) and karṭṛ-karṇayos tṛtīyā (2319) which are general statements with regard to vibhakti representation of karma and kartā. True a kāraka could be represented by more than one vibhaktis. We have given examples of such cases above. But Pāṇini has taken care in each case to state precisely the environments where a kāraka could be represented by more than one vibhaktis. No such carte blanche has been issued in favour of any kāraka. It would certainly spell disaster and confusion. One would be left guessing as to under what syntactic environments a kartā, for instance to be represented by the 1st or 3rd vibhakti. If we attempt to specify the syntactic environments under which the 1st vibhakti could represent kartā or karaṇa, we shall notice that verbal endings will perforce, enter into the picture. The only way to describe the environments is to state the endings. This is exactly what Pāṇini has done. The verbal endings in these cases show agreement in person and number with the kartā or karma as the case may be. No other kāraka holds such a relation with the verbal endings. Pāṇini thus should be credited for keeping two representations of kartā and karma separate (in active and passive constructions) by expressing them differently by nominal and verbal endings. An attempt to represent categorial (grammatical) distinction motivated by different grammatical considerations (active and passive constructions in the present case) on same level in identical terms (i. e. by vibhaktis here) is sure to bring confusion. Now Pāṇini's governing rule anabhihite "the kāraka relations are represented by vibhakti if not already expressed by other grammatical devices (231)" makes perfect sense.

(c) Representation by primary suffixes.

Suffixes other than verbal inflectional endings (tiṇ) added to verbal roots (dhātu) are called kṛt or primary (3193),⁴⁶ As a general rule a primary suffix denotes (kartā (3467) ⁴⁷ There are only a few suffixes that express other kāraka relations. We give here a few

illustrative examples. "The suffixes *ṇval* (= *aka*) and *ṭṛc* (= *ṭṛ*) are added to verbal roots to denote *kartā* (21133)⁴⁸ e.g. *kṛ-ṇvul* > *kār-vu* > *kār-aka* "one who does", *nī-ṭṛc* > *ne-ṭṛc* > *netṛ-* "one who leads". "The suffix *ṣṭran* (= *tra*) is added to *√dhā* (< *dhai*) "feed" to express *karma* (32181),⁴⁹ *dhā-ṣṭran* > *dhā-tra* > *dhātra-i* (fem-) "who is such (by children), i.e. a wet nurse." "The suffix *ṣṭran* (= *tra*) is added to the roots *√dā* "cut", *√nī* "lead", *√sas* "kill"...to denote *karana* (32182)",⁵⁰ e.g. *dā-ṣṭran* > *dā-tra* "that with which one cuts, i.e. a sickle", *sas-ṣṭran* > *sas-tra* "that with which one kills, i.e. a weapon". "The words *dāśa*-and *goghna-* denote *sampradāna* (3473)."⁵¹ *dāśa* is formed by adding *ac* (31134) to *√dās* "give". Thus *dāśac* > *dāś-a* "one to whom something is given, i.e. "a servant". *ṭak* (= *a*) is added to */han* "kill" to express *sampradāna* (3252 ff). The derivative *han-ṭak* > *ghn-a* = is compounded with *go* "cow" giving the form *go-ghna*- "for whom a cow is killed, i.e. a guest, etc." "The word *bhīma-* "one who is source of fear" (formed irregularly by *uṇādi* suffixes) denotes *apādāna* (3474).⁵² "The suffix *kta* (= *ta*) added to the verbal roots meaning "stability, motion, and eating" denotes *adhikaraṇa* also (3476);⁵³ e.g. *ās-kta* > *ās-i-ta* = *āsita* "the place where one sits," *bhuj-kta* > *bhuk-ta* "the place of eating."

(d) Representation by Secondary Suffixes

The secondary suffixes are introduced by *taddhitāh* "here follow the suffixes called *taddhita* (4176)". These are added to nominals and are governed by the general statement: "A *taddhita* suffix is added optionally to a constituent in syntactic construction stated initially in a grammatical rule (*sūtra*) in the *aṣṭādhyāyī* (4182).⁵⁴ In other words, the underlying structure from which a derivative is formed is a phrase and the derivative formation is optional. For instance, one may use the phrase *upagoḥ putraḥ* "the son of upagu" or a derivative *aupagava-*. Pāṇini's formulation of the rule that is applicable in the present case is *tasyāpatyam* (4192). It means literally "his son." But as a grammatical rule, interpreted in accordance with the rules of interpretation operative in the *aṣṭādhyāyī*, it means, the relevant suffix (*aṇ* here) is added to a nominal in the 6th *vibhakti* standing in construction with another word (here *putraḥ*) in the meaning of "descendent of". Thus *upagu-aṇ* > *aupagava* "descendent of upagu."

Quite a few relations denoted by the *taddhita* suffixes are *kāraka* relations. However, Pāṇini in his rules does not always indicate the *kāraka* relation explicitly. Instead, he mentions only the appropriate *vibhakti* representing the *kāraka*. To derive *krauñca-* from the underlying phrase *kruñcena dṛṣṭam* (*sāma*) "(the *sāma*)

revealed by *kruñca*," he adds a suffix *aṇ* to *kruñca* to convey the meaning "revealed by". To pack all this information in as few words as possible, he frames his rule as follows: *dr̥ṣtam sāmā* (427) meaning literally "the *sāmā* revealed by him." A fuller interpretation following the conventions is: "the appropriate suffix (here *aṇ*) is added to a nominal in the 3rd vibhakti in construction with *dr̥ṣta*, in the meaning of "a *sāmā* revealed by so and so". Here the relation obtaining in the underlying phrase and sought to be represented by the *taddhita* suffix *aṇ* is that of *kartā*. But Pāṇini does not say in so many words for reasons explained elsewhere (see ff 5). Similarly in *tad adhīte tad veda* (4259) meaning "the appropriate suffix is added to the nominal occurring in the 2nd vibhakti and standing in construction with the verbal root *adhi/i* "study" or */vid* "know" in the meaning of "one who studies that" or "one who knows that". Thus, *vyākaraṇam adhīte* > *vyākaraṇa-* *aṇ* > *vaiyā-karṇa-* = *vaiyākaraṇa-* "one who studies grammar, i. e. a grammarian." Clearly *vyākaraṇa* here manifests *karma* *kāraka* but Pāṇini in his *sūtra* indicates it by "tad" standing for second vibhakti. "An appropriate suffix is added to a nominal in the 5th vibhakti in construction with *pra/bhū*, in meaning of "appear for the first time (4383);" e. g. *himālayāt prabhavati* > *himālaya-aṇ* > *haimālaya-a* > *haimālayī* (fem.) "the Ganges emerging from the Himalayas." The suffix *aṇ* here denotes *apādāna* relation. "The suffix *ṭhak* (= *ika*) is added to a nominal in construction and occurring in 1st vibhakti, in the meaning of "to whom that is given regularly (4166)."⁵⁵ This expresses *sampradāna* *kāraka* relation. Thus *apūpā nityam yasmai dīyante* "to whom cakes are given daily" > *apūpā- ṭhak* > *āpūpa-ika* > *āpūpika-*. "The suffix *ṭhak* (= *ika*) comes after *dadhi-* "curd" occurring in the 7th vibhakti and in construction (with another word), in the meaning of "food prepared in" (4218).⁵⁶ Thus, *dadhni saṃskṛtam* > *dadhi-ṭhak* > *dādhi-ika* > *dādhika*. Here the suffix *ṭhak* expresses *adhikaraṇa*.

(e) Represtation by compound construction

Formation of compounds is governed by the general dictum laid down by Pāṇini in 211.⁵⁷ that such constructions are effected where words are related syntactically. We do not expect many such syntactic constructions between nominals and verbals which would form nominal compounds. We shall give a few examples where such possibilities occur. "A nominal ending in the 3rd vibhakti denoting *kartā* or *karana* is mostly compounded with a derivative formed with *kṛt* (primary) suffixes. The compound thus formed is *tatpuruṣa* (2132)."⁵⁸ Thus *ahinā hataḥ* > *ahi-hata-* "killed by a snake"; *paraśunā chinnaḥ* > *paraśu-cchinna* "cut with an axe" "A nominal

occurring in the 2nd vibhakti is compounded with *śrita*- “gone to” *atīta* “gone by”, *patita*- “fallen”, *gata* “gone”, *atyasta*- “passed”, *prāpta*- “obtained” and *āpanna*- “reached” (2124)⁵⁹, e.g. *grāmam gataḥ* > *grāma-gata*- “gone to the village 2nd vibhakti here expresses karma relation. “A word occurring in the 5th vibhakti is compounded with *bhaya*-” fear “(2137)”⁶⁰ *vṛkāḍ bhayam* > *vṛka-bhaya*- “fear from wolf”. The 5th vibhakti expresses *apādāna* relation. Similarly the compounds *māsa-deyam* (*ṛṇam*) “(a debt) to be paid in a month” denotes *adhikaraṇa*.⁶¹ Even such an *avyayībhāva* compound as *adhi-stri* “concerning women” expresses the 7th vibhakti which obviously is *adhikaraṇa*. Thus almost all *kāraka* relations are expressed by compound constructions, but not in many constructions.

To sum up: primarily nominal endings express *kāraka* relations. The *kartā* and *karma* alone are represented by verbal endings. The derivative suffixes and compound constructions do express almost all *kārakas* but in a very restricted way.

3. Hierarchical relation among *kārakas*

Pāṇini describes the *kārakas* in the order of *apādāna*, *sampradāna*, *karaṇa*, *adhikaraṇa*, *karma* and *kartā* (1424-54). Later grammarians notice in this order a hierarchy of practical use in selecting the appropriate *kāraka* in case a nominal holds simultaneously two or more *kāraka* relations with a verbal. The one mentioned later in the above enumeration prevails in case of conflict (cf. 142). The examples cited are: (1) *dhanuṣā* (*karaṇa*) *vidhyati* “he shoots with a bow”. vs *dhanuṣo* (*apādāna*) *vidhyati* “he shoots from a bow.” (2) *kaṃsapātryām* (*adhikaraṇa*) *bhuṅkte* “he eats in a plate”. vs *kaṃsapātryā* (*apādāna*) *bhuṅkte* “he eats from a plate”. (3) *gām* (*karma*) *dogdhi* “he milks the cow.” vs *goḥ* (*apādāna*) *dogdhi* “he milks (milk) from the cow”. (4) *geham* (*karma*) *praviṣati* “he enters the house”. vs *gehe* (*adhikaraṇa*) *praviṣati* “he enters in the house”. (5) *dhanur* (*kartā*) *vidhyati* “the bow shoots”. vs. *dhanuṣā* (*karaṇa*) *vidhyati* “he shoots with a bow.” vs. *dhanuṣo* (*apādāna*) *vidhyati* “he shoots from a bow”. (6) *sthāli* (*kartā*) *pacati* “the pot cooks”. vs. *sthālyām* (*adhikaraṇa*) *pacati* “he cooks in the pot”

(Mahābhāṣya: Rohtak, Vol. 2, pp. 316-6). It is maintained here that in each case the *kāraka* relation occurring in the above groups supercedes the rest. Arguing in support of the proposition *kāiyyaṭa* observes: “*dhanus* cannot serve as the most effective means of “shooting” unless *apāya* (recession, movement away) is desired”. Thus there is an occasion for two *saṃjñās* to show up (-one based on *apāya*, i.e. *apādāna* and another on *sādhaka-tamatva*,

i.e. karaṇa) and karaṇa, being later, prevails. Commenting on Kaiyyāṭa, Nāgojibhaṭṭa observes that since shooting is actually done by the arrow discharged from the bow, the bow cannot be regarded as karaṇa. However, dhanus "bow" being the point of departure for arrow must be treated as karaṇa in the series of actions culminating in shooting.⁶² Thus both apādāna and karaṇa are realized simultaneously in case of "bow".

The above discussion, however, does not settle the point. It is not convincing that two kāraka relations are arising simultaneously. In fact dhanus holds neither apādāna nor karaṇa relation with /vyadh "shoot". The commentators though point out (and rightly so) that it is the "arrow" which is the real karaṇa (which of course is not mentioned here), yet continue to argue that the "bow holds apādāna relation with the verb meaning "discharge", (which again is not mentioned here), since it serves as a starting point for the "arrow. Thus, dhanus can be related to "shoot" only very indirectly. The underlying sentence would be something like-dhanuṣo nirgatena śareṇa vidhyati, "he shoots with an arrow discharged from the bow". Here dhanus holds apādāna relation with the verb nir -/gam "discharge". Now sara- "arrow" which is in karaṇa relation with /vyadh "shoot", is suppressed here and instead, the karaṇa function is transferred to dhanus "bow", to give dhanuṣā vidhyati "he shoots with a bow." The question of conflict based on simultaneous realization of two or more kāraka relations does not arise.

In gām dogdhi vs. gor dogdhi there is no conflict. These are two alternatives where the speaker exercises his option (vivakṣā). Pāṇini's rule 1451 sanctions use of karma in case apādāna, etc. are not expressed. (See 1 (vii))

However, in kaṃsapātryām bhuñkte vs. kaṃsapatryā bhuñkte and geham praviṣṭi vs. gehe praviṣṭi, simultaneous realization of two karaka relations may be recognized. Here the conflict is resolved by selecting the one that is mentioned later. Thus the hierarchy of selection may be said to operate in a very limited way.

4. kārakas : a verb governs

A verbal root plays the central role in determining the kāraka organization in a simple sentence. It appears that all verbs can take kartā and adhikaraṇa. The verbs seem to fall into five classes according to the number of kārakas they govern. These are :

(i) Verbs that take the minimum number i.e. kartā and adhikaraṇa; e. g. īśvaro brahmāṇde asti, 'God is in the Universe'.

(ii) Verbs that can take kartā, adhikaraṇa and karaṇa; e.g. devo rajjvā kūpe ālambate, "Deva hangs in a well with a rope."

(iii) Verbs that can take karta, adhikaraṇa, karaṇa and apādāna; e.g. vāyor vegena vane vṛkṣāt patrāṇi patanti, "By the vehemence of the wind leaves fall from the tree in the forest."

(iv) Verbs that can take karma besides the above; e.g. vane devo hastena nadyā jalam pibati, 'Deva drinks water from a river with his hand in the forest.'

(v) Verbs that can take sampradāna also in addition to the above; e. g. devo brāhmaṇāya rajjvā vane kupāt jalam karṣati 'Deva draws water for the brāhmaṇa from a well with a rope in the forest.'

We may notice that sampradāna is dependent on karma but not vice-versa.

Usually there is only one occurrence of a kāraka in a simple sentence. However grammarians notice there could be two or more in case of certain verbs. Nāgojibhaṭṭa for instance, cites an example where *three* karaṇa relations occur; aśvena pathā dīpikayā gacchaṭi "He goes on a horse along the road in the light of a small lamp." two karmas occur in such a sentence as aham tvām tṛṇam/api/na manye, "I don't consider you even a straw"; or vipro nṛpam gām yācate, "The brāhmaṇa asks the king for a cow."

5. Motivation

Pāṇini seems to have been motivated to set up the kāraka categories to account for facts of grammar at various levels. For instance, at syntactic level transformation of a sentence structure into another and nominalization of a sentence in embedded constructions is stated in terms of kārakas. The kāraka relations in his system offer explanation of certain phonological and morphophonemic features and serve as conditioning factors for selection of verbal endings and derivative suffixes. He is also able to capture certain generalizations in terms of kārakas in the statement of the rules of grammar. We shall now briefly notice these below.

Before we proceed further it is important to point out that very often Pāṇini does not make any explicit mention of kāraka relations in the statement of this rules. Instead, he refers to the vibhaktis representing them. In fact whenever he has a choice he prefers to formulate his rules in terms of vibhaktis rather than kārakas. For instance, to explain the formation of vārija- 'lotus, born in water'. Pāṇini states. "The suffix ḍa (=a) is attached to the verbal root √jan "be born" in the meaning of past, when it is in construction with a nominal occurring in the 7th vibhakti (saptamyām

janer ḍaḥ 3297)". Thus *vāriṇi jātaḥ* > *vāri-jan-ḍa* > *vāri-ja*. The 7th vibhakti here denotes *adhikaraṇa kāraka* beyond any doubt by *ādhāro adhikarṇam*, "the locus is *adhikaraṇa*" (1445).

There are, however, good reasons why he does so. (i) It allows him to make more comprehensive generalizations, as the vibhaktis express both *kāraka* and non-*kāraka* relations. (ii) It also facilitates manipulation of *anuvṛtti* "carrying over process". This may not seem a compelling grammatical consideration. That is true. But with Pāṇini it is more than an adequate reason since he prizes economy in statement of his rules as cherishingly as anything else. Thus while looking for *kāraḥ* in Pāṇini we should constantly bear this fact in mind. We shall probably be able to resurrect quite a few *kāraka* relation comouflaged under vibhaktis.

Now we proceed to consider those related syntactic constructions which are described by Pāṇini in terms of *kāraka* notions. The treatment is just illustrative. No attempt is made to exhaust such constructions.

I. (a) Kartari-karmani : Active-Passive

Take the following pair of sentences.

(1) *devadattaḥ kaṣam karoti*, "Devadatta makes a mat."

(2) *Devadattena kaṣaḥ kriyate*, "By Devadatta a mat is made."

There are three linguistic elements in both the sentences, namely, *Devadatta*, a nominal functioning as *kartā* in both; *kaṣa* "mat", another nominal, *karma* in both and lastly *√kṛ*, a verbal root meaning "do". The two sentences exhibit different structural arrangements of these. The two appear to be related structurally and are semantically identical. Pāṇini notices this fact and brings out their structural relatedness. He enunciates that the verbal ending in (1) expresses *kartā*, thus *karma* takes 2nd vibhakti (232).⁶³ -te in (2) expresses *karma* (1313 and 3167),⁶⁴ and *kartā* takes 3rd vibhakti (2318),⁶⁵ *kartā* in (1) and *karma* in (2) are represented by 1st vibhakti (See: 2 (b)). The identity of meaning is preserved by identical *kāraka* relations between the linguistic elements in both the sentences. The *kāraḥ* however, differ in their surface realizations.

(b) aṇi : ṇi : non-causal : causal

Now observe the following sentences.

(1) *kiṇkara odanam pacati*, "the servant cooks rice.

(2) *Devadattaḥ kiṇkareṇa odanam pācayati*,
"Devadatta makes the servant cook rice."

In Pāṇini's system the two sentences are related as simple vs causal. In (1) the "servant" is kartā and carries out the activity on his own accord, while in (2), he is directed by Devadatta. Thus by *heutmati ca*, "to express causation the suffix *ṇic* is added to the verbal root (3126)," we have *pac ṇic śap ti* > *pāc-ay-a-ti* = *pācayati* "he causes to cook". The verbal ending -*ti* in both the sentences denotes kartā (which in case of (2) is called *hetu* also (1455). The kartā of the non-causal sentence is represented by the 3rd vibhakti in the causal by 2348. The linguistic elements thus stated in terms of *kāraṇas* bring out how the two sentences are related structurally.

(c) **kartari : karma-kartari**

Let us consider the following sentences :

- (1) *devadattaḥ kāṣṭham bhinatti*, "Devadatta splits wood."
 (2) *kāṣṭham bhidyate*, "The wood splits".

Structurally the two sentences seem to be related. Semantically also there is much in common. Let us first state how Pāṇini treats these. He describes the structure of (2) in terms of (1). He lays down that a "kartā, affected by the verbal action in a similar manner as karma, is treated like a karma (so far as its realization in language is considered) (3187)." ⁶⁶

In order to understand what Pāṇini means by the above statement, let us analyse these sentences further. *kāṣṭha* "wood" in (1) is karma and kartā in (2); but in both cases it is equally affected by the action denoted by the verbal form, i.e., it is wood that is split. In (1) it is Devadatta who is responsible for splitting it, while in (2) the wood splits of its own accord. Nevertheless in both cases the wood is cut into pieces. This is exactly what Pāṇini means by stating, "a kartā affected by the verbal action in a similar manner as karma."

How is such a kartā then different from an ordinary kartā? Or in other words how does kartā in (1) differ from kartā in (2)? In a sentence the verbal form expresses either kartā or karma. When it expresses karma it takes *ātmanepada* (middle voice) suffixes (1313) and *yak* (= *ya*) is added to the root (3167).⁶⁷ Elsewhere *parasmaipada* (active voice) suffixes are added to the root to express kartā (1378).⁶⁸ Thus in (1) the *parasmaipada* suffix -*ti* expresses it. In (2) also the kartā should have been realized in the same manner. But there is a difference. The kartā in (2) is affected by the verbal action as karma in (1). To express such a kartā 3187 (quoted above) lays down a special provision. It has to be treated like karma for the purposes of linguistic representation. Thus it is to be represented

by a form identical with the one that expresses karma, which from the root √bhid "split" will be realized by adding ātmanepada suffix and yak. Thus we have bhid-yak-te > bhid-ya-te = bhidyate. (However, in accentuation the form differs optionally from the one that denotes karma. (61192)⁶⁹ states that "a root read with a final vowel in the dhātupāṭha may optionally have acute on the first syllable before yak when it denotes kartā). Now kâṣṭha- in (2) is a kartā but at the same time it suffers the action denoted by the verb like a karma. In Pāṇini's grammar such a kartā, is called karmakartā (3162),⁷⁰ karma assuming the role of kartā. And its peculiar role is matched by a hybrid sort of verbal form.

Obviously such a construction is possible in case of transitive verbs. But all transitive verbs do not undergo this transformation. To explain this is introduced the notion of bhāva and kriyā, which stated briefly is as follows. ⁷¹ When the action denoted by the verbal root is realized (actualized) by such means as to involve physical movements, etc. it is called kriya. e.g. devadatto grāmam gacchati, "Devadatta goes to the village." The action denoted by the root /gam "go" involves physical exertion on the part of the kartā (agent) for its realization. The action of the verbal root is kriyā and exists in kartā. In devadattaḥ kâṣṭham bhinatti "Devadatta splits wood," the action of splitting is again kriyā and *resides in the karma*. But on the other hand, if the action denoted by the verbal root is actualized by such means as involve no physical movements, etc., it is called bhāva. For instance in the sentences agnir ghaṭam pacati, "the fire bakes the earthen pot," and devadattas tām cintayati, "Devadatta thinks of her," the bhāva type of action exists in karma kartā respectively. Only such verbal roots where kriyā or bhāva resides in karma will undergo karmakartari transformation.

In this context we shall like to consider the following sentences also.

- (1) ārohante hastinam hastipakāh, "The elephant-drivers mount the elephant."
- (2) ārohayate hastī (svayam eva), "The elephant allows itself to be mounted."

Obviously the sentences are related. (1) is non-causal while (2) is causal. Besides the karma in (1) has become kartā in (2). The verbal form in (2) is rightly causal but it takes ātmanepada (middle voice) suffix which was not expected. 1374 lays down that "after a verbal root taking ṇic (causal suffix), ātmanepada ending will be added if the fruit of the action goes to kartā."⁷² However in the example under discussion the elephant is in no way benefitted by the

action. Pāṇini explains the special circumstances when a causal verb can admit ātmanepada endings even though the kartā is not benefitted by the action of the verb. He says, "the ātmanepada endings occur after a verb in the causal if what is karma in the non-causal becomes kartā in the causal except in case of the verb meaning "regret (1367)." ⁷³

Well, this again is a case of karmakartari type construction. The kāṣhikā raises the question, what is the necessity of enunciating this rule while ātmanepada ending is allowed for its being a case of karmavadbhāva, i. e. karma becomming a kartā as in the example discussed above. It then points out the difference between the two. Only those roots are susceptible to causal transformation where *bhāva* or *kriyā* reside in *kartā*. Thus Pāṇini treats both types, namely kāṣṭham bhidyate (svayam eva) and hastī ārohayate (svayam eva), as manifestations of the same phenomenon, karmakartri. The difference lies in the class of verbs, in one case the *bhāva* or *kriyā* resides in karma while in the other in kartā. ⁷⁴

In these illustrations Pāṇini wishes to draw our attention to the fact that the role of kartā is completely redundant. The karma assuming the role of kartā expresses felicity and effortlessness of the execution of action. It is intended to give a feeling that the action is proceeding smoothly without any apparent exertion on the part of any agency. The karma, which in any case is involved in action, is competent itself to accomplish the action. The commentators have rightly added the phrase svayam eva "on its own accord" to bring out the fact that the karma is as if performing the activity.

In fact these transformations form part of a bigger complex. Patañjali⁷⁵ in all seriousness directed his attention to the phenomenon where any kāraka could assume the role of kartā. He cites such examples as asiḥ chinatti, "the sword cuts" sthāli pacati, "the pot cooks"; balāhako vidyotate "the cloud flashes," etc. where karaṇa, adhikaraṇa and apādāna respectively become the kartā.

Kiparsky and Staal in discussing the derivation of kareṇur ārohayate niṣadinam, "the she-elephant allows itself to be mounted by the elephant-driver" as reflexive, miss the point which Pāṇini so painstakingly wishes to make. He is not interested in describing deletion of karma, rather he raises it to the position of kartā. Then he notes down the consequent grammatical changes. We thus view all the examples discussed here as manifestation of karmakartari phenomenon, expanded by Patañjali to include even other cases.

(II) Verbalization

Next we take up treatment of transformation which turn a nominal holding various *kāraka* relations with the main verb of a simple or complex sentence, into a verb replacing the whole verb phrase. We shall here give only illustrative examples and do not offer an exhaustive treatment of the subject. These are described by Pāṇini chiefly in 317-21. Take the following pair of sentences:

(1) Devadatta ātmanaḥ putram icchati, "Devadatta wishes a son for himself."

(2) Devadattaḥ putriyati, "Devadatta wishes a son for himself."

Pāṇini relates (1) and (2). He describes the necessary conditions where such a derivation is possible and also lays down the consequent morphological changes to be made. He formulates the rule as follows. "The suffix *kyac* (= *ya*) is added to an inflected nominal form standing in *karma* relation with the verb $\sqrt{\text{iṣ}}$ —"desire, wish", in the meaning of "wish that for one's self (318)." ⁷⁶ The necessary conditions for the application of this rule exist in (1) i.e. *putram*, an inflected form is *karma* of *icchati* and the object is desired by the *kartā* of *icchati* for his own self. Thus we have *putram-kyac* > *putra-ya* > *putriya-* "desire for one's self a son." The rule will not be operative in *devadatto rājñaḥ putram icchati* "Devadatta wishes a son for the king."

"The suffix *kyac* (= *ya*) is optionally added to an inflected nominal which is *karma* serving as a standard of comparison in the meaning of "consider, treat as" (3110)." ⁷⁷ Thus *gardabham iva ācarati aśvam*, "he treats the horse like a donkey" will give us *gardabhīyati aśvam* in the same meaning by adding *kyac* to *gardabham*. (The morphological derivation is the same as in the previous example).

Similarly *śyena iva ācarati kākaḥ* > *śyenāyate kākaḥ*, "the crow behaves like a hawk." Here "the suffix *kyāñ* (= *ya*) is added optionally to an inflected nominal being *kartā* and serving as object of comparison. The finals of the nominal (if there is any) is dropped (3111)." ⁷⁸ Thus *śyenaḥ-kyāñ* > *śyenāya* "behave like a hawk."

Likewise *devadatto gantum icchati* > *devadatto jigmiṣati*, "Devadatta wants to go"; "To the verbal stem occurring as *karma* of the verb /is 'desire' is attached optionally the suffix *san* in the meaning of 'desire to' provided the *kartā* of the two (i. e. /is and the verb that occurs as *karma*) is the same (317)". ⁷⁹ Here we have *gantum* (a gerundive) as a *karma* of /is. Thus *gam-san* > *ji gam-i-sa* > *jigamiṣa-* "desire to go".

We may add here a more interesting example. "The suffix *kyañ* (= *ya*) is added to the nominal *sukha-*, etc., occurring as *karma* if *sukh-*, ect. are experienced by the *kartā* of the sentence (3118)".⁸⁰ In *devadattaḥ sukhāṃ vedayate*, "Devadatta experiences happiness," the experiencer of happiness is Devadatta, the *kartā* of */vid-* "experience, feel". Thus *kyañ* is added to *sukha* to give *sukhāyate* (through application of other relevant rules of derivation).

(III) Nominalization

We shall deal here with such cases of nominalization which are derived from underlying structures that represent *kāraka* relations. These are formed by *kṛt* (primary) or *taddhita* (secondary) suffixes. These occur embedded in larger constructions.

"To indicate futurity the suffixes *tumun* and *ṇvul* (= *aka*) are added to a verbal root which is in construction with another verb denoting an action performed for the sake of a future action (3310)."⁸¹ We have a sentence *bhokṣye iti varjati*, "I'll eat" thus he goes." Here we have a verb "eat" which is in construction with another verb "go". The action denoted by the latter is performed for the sake of "eat" which here indicates futurity. Thus the suffix *ṇvul* is added to "eat" to give us a noun that denotes futurity and also *kartā* by (31133).⁸² Thus we have *bhuj-ṇvul* > *bhuj-aka* > *bhojaka-* "one who will eat." In the above sentence *bhokṣye* "I'll eat" now is replaced by *bhojakaḥ* and the derived sentence *bhojako gacchati* is used in the same meaning.

To take another example. "The suffix *aṇ* is also added to a verbal root governing a *karma* and in construction with a verb denoting an action performed for another action (3312)."⁸³ For instance *kambalam dāsyāmi iti vrajati* > *kambala-dāyo vrajati*, "he goes to distribute blankets." Here the suffix *aṇ* is attached to *√dā* "give" to express futurity. *√dā* has in construction the root *√gam* "go" the action of which is performed for the sake of *√dā*. He goes so that he may be able to give. Similarly *kumbham karoti* > *kumbhakāraā* "he makes a pot, i.e. he is a potter." Here the suffix *aṇ* is added to the root *√kṛ* "do". The necessary condition is that the root should govern a *karma*, which is *kumbha-* "a pot" in the present case.⁸⁴ (The compounds in the above cases are effected by *upapadam atīñ* (2219), "an upapada (2192) which is not an inflected verbal form is compounded with a nominal in construction with it.")

We may also give an example to illustrate the use of *taddhita* (secondary) suffixes to form such nouns. Such constructions are,

however, optional. *ṣatena krito aśvaḥ > ṣatyō aśvaḥ* "a horse purchased for hundred." Here the suffix *yat* (= *ya*) is added to the nominal occurring in the 3rd vibhakti and in construction with *kṛita-*. The 3rd vibhakti here denotes *karaṇa kāraka* relation. Pāṇini's formulation of the rule reads *tena kṛitam*, "the appropriate suffix (here *yat*) is added to a nominal occurring in the 3rd vibhakti and in construction with *kṛita*, in the meaning of "bought with" (5137)." The nominal occurring in the 3rd vibhakti represents here *kartā*.

(IV) Explication of the grammatical features

Pāṇini finds that certain grammatical fact can be explained only in terms of *kāraka*. We shall produce here a few examples to elucidate this point.

(a) Morphophonemic changes

To describe morphophonemic changes, Pāṇini has made use of phonological, morphological, syntactic and semantic environments. However, some of these are explained in terms of *kārakas*. Note, for example, his observation with regard to change of *n* into *ṇ* in *pāṇa*. "The *n* of *pāna* changes optionally into *ṇ* if it occurs as second member in a compound in the meaning of *bhāva* or *karaṇa* and the appropriate phonological conditions of change occur in the prior member of the compound (8410),"⁸⁵ Thus we have *kṣīra-pāna* *kṣīra-ṇāṇa* "drinking of milk or a vessel with which milk is drunk."

"The *ta* of *niṣṭhā* (past passive participle suffix) added to */aṅc* changes into *na* provided the word thus formed is not in construction with a word in *apādāna* (8248)." ⁸⁶ Thus *aṅc-ta* would give two forms *akta-* and *ak-na* depending on the syntactic environment in which it is used. For instance *tasmāt paśavo nyaknāḥ*, "Therefore the animal's are bent low"; while *udaktam udakam kūpāt*, "water was drawn from the well", with an *apādāna*.

(b) Placement of accent

Placement of accent in certain instances is conditioned by the *kāraka* relations exhibited by the words in question. A few examples are:—

"The first syllable of a root read in the *dhātupāṭha* (verb root lexicon) with a final vowel carries *udātta* accent before the suffix *yak* (= *ya*) expressing *kartā* (61192),⁸⁷ (*yak* is added to a verbal root before *sārvadhātuka* suffix to denote *beāva* and *karma* (3167) but by (3187) it expresses *kartā* also). Examples are: *lúyate kedāraḥ*, "the field harvests (itself)," *beidyate kāṣṭham*, "the wood

splits”; otherwise bhidyáte kâṣṭham, “the wood is being split,” etc. (yak expresses karma here).

“The word occurring in the 3rd vibhakti in a compound retains its original accent if followed by a word expressing karma (6248)”⁸⁸ e.g. ahi-hataḥ “killed by a snake”; dātra-lūnaḥ” cut by a scyth.”

“A verbal form in lṛṭ (future) occurring in a complex sentence with a form in loṭ (imperative) of the verbs meaning “motion”, does not bear an anudātta accent unless the kārakas of both the verbs are wholly different one from another (8151);⁸⁹” e.g. āgaccha devadatta grāmam, drakṣyāsi enam, “Come on Devadatta to the village; you will see it.” But āgaccha devadatta grāmam. pitā te odanam bhokṣyate, “Come on Devadatta to the village. Your father will take rice.” In the latter sentence the kārakas of the verbs have nothing in common. Thus bhokṣyate (lṛṭ) carries anudātta accent (which is not marked).

c. Selection of derivative suffixes

Selection of primary (kṛt) or secondary (taddhita) suffixes in certain constructions is conditioned by the kāraka relations. For instance, “the suffix ghañ (=a) is added to a verb to form an abstract or common noun (saṃjñā) denoting a kāraka relation other than that of kartā with the verb (3319)⁹⁰ e.g. pra-as-ghañ > prāsa (mas),” a spear. that which is thrown (*karma*); pra-siv-ghañ > pra-seva “that which is sewn, a bag (*karma*)”

“The suffix śas is added optionally after a word meaning ‘much or little’ if it denotes a kāraka relation (5442),”⁹¹ e.g. bahūni dadāti > bahuśaḥ dadāti “he gives much”; stokam datāti > stokaśaḥ dadāti “he gives little.”

“The suffix tasi (=tas) is substituted optionally in place of the 5th vibhakti denoting apādāna except in case of roots √hā “give up” and √ruh “grow” (5445)”⁹², e.g. caurāt bibheti > caurataḥ bibheti “he fears the thief”; grhāt prasthitaḥ > grhataḥ prasthitaḥ “he started off from home.”

“The suffix ṇamul (=am) is added to a verb to express “haste” if a noun in apādāna is in construction with it (3452).⁹³ śayyāyā utthāya dhāvati > sayyottham (> śayyā-utth-am) dhāvati, “he runs off as soon as he gets up from his bed.” Likewise, “the suffix ṇini (=in) is added to a verb in construction with a word in kartā denoting an object of comparison (3279)”⁹⁴ e.g. uṣṭra iva kroṣati > uṣṭra-kruṣ in > uṣṭra-kroṣin- “who makes a noise like a camel.” Also, “the suffix ṇin (=in) is added to √yaj “sacrifice” in construction with a word denoting karaṇa in the meaning of “past” (3285);⁹⁵

e.g. agniṣtomena iṣṭvān > agniṣtoma - yaj-ṇin > agniṣtoma-yāj-in
 “one who sacrificed with agniṣtoma-sacrifice.”

(d) Selection of verbal endings

Selection of verbal endings by some verbs is conditioned by the kāraka relation denoted by the nominal in construction with it. “The verb √nī takes ātmanepada (middle voice) endings when it governs a karma which is incorporeal residing in kartā 81337;”⁹⁶ e.g. devadattaḥ krodham vinayate “Devadatta subdues his anger.” But devadatto rāmasya krodham vinayati “Devadatta removes Ram’s anger.”

“The parasmaipada (active voice) endings are added after a causal verb which is intransitive in its non-causal form if it has a sentient being as its kartā (1388)”⁹⁷ e.g. bālaḥ śete “the child sleeps” > jananī bālam śayayati, “mother sends the child to sleep”; devadatta āste “Devadatta sits” > yajñadatto devadattam āsayati “yajñadatta makes Devadatta sit.”

(e) Restrictions on compound formation

Restrictions on certain constituents entering into compounds are stated in terms of kāraka relations. For example, a word in the 6th vibhakti will *not* form a compound with another inflected word in construction with it if it denotes *adhikaraṇa* or *kartā* relation expressed by kta and ṭṛc or aka suffixes respectively (2213, 15).⁹⁸ No compounds will be formed in the following: idam chātrāṇam yātam “this is the place where the students went”; idam chātrāṇām bhuktam “this is the place where the students ate”; bālasya śāyikā “the act of sleeping by a child”. Likewise, “the noun in the 6th vibhakti is *not* compounded with a noun denoting a kartā expressed by ṭṛc or aka (2216)”⁹⁹ Thus compounding is debarred in apām srṣṭā “the creator of waters”; odanasya bhojakah the eater of rice.”

Once the kāraka categories have been established in the language for reasons discussed above it consequently enables Pāṇini to make generalization such as karmaṇi dvitīyā “the second vibhakti is used to denote karma (232);” apādāne pañcamī “to express apādāna 5th vibhakti is employed”; etc. Besides, the use of 5th or 7th vibhakti in devadatto dya bhuktvā dvyahāt dvyāhe vā bhoktā, “Devadatta having eaten today will eat two days latter from today, is accounted for by Pāṇini in terms of kāraka relations. He says, “The 5th or 7th vibhakti is used with a word denoting time or space interval between two kārakes (237).”¹⁰⁰

5. Theoretical Implications

(1) Pāṇini has nowhere explicitly stated the theoretical framework he is working in. We can form an idea of his theory of language from the way he organizes his description of Sanskrit language. It seems he views language broadly as representation as an abstract system formulated in terms of conceptual relations, established on rational (logical) and/or empirical considerations. His grammatical categories thus correspond to underlying conceptual relations as far as it could be possible. The *kāraṇas* are a case in illustration.

(2) A natural language, however, grows and functions within the confines of social organization and history, time and space. The social and historical forces influence the linguistic system in diverse ways: as a result of which a system always comes to acquire idiosyncratic features. Pāṇini recognizes constraints of actual linguistic usage on linguistic system. His sense of realism thus keeps him close to the facts of the language. He is never swayed away by logical considerations. With a penetrating insight he is able to discern the role of various forces acting on each other in shaping the language. The *kāraṇas* illustrate this point magnificently. Though conceived as some sort of logical relations, these were willingly further modified by conceding various other bases just to accommodate the actual world of Sanskrit language.

(3) To Pāṇini language is a unified system organized hierarchically. Various levels and sub-levels are intimately inter-related and interact on one another. Language, according to him, seems to be organized in a set of concentric circles each representing a level or sub-level. The inner circles may comprise formal features (phonological, morphological, syntactic, etc.) and the outer circles successively may denote semantic content of language and events of the real world, the colorful playground of language. Pāṇini would reach out to the other circle(s) if no satisfactory explanation of a linguistic fact is available in terms of the inner circle(s). We may also note here that as we move outward the number of facts to be explained is less and less. For instance most of the morpho-phonemic changes are resolved in terms of phonological units, some in terms of morphology, a few in terms of syntax, and very few in terms of meaning and real world. This is true of facts at other levels also. From this one might get an impression that Pāṇini is being ad hoc and eclectic in offering explanations of linguistic facts in such unrelated terms. But as we observed earlier he considers total environments in which language functions as relevant for explication of linguistic facts. He has no compunction in seeking

explanations in terms of one another. One should not be surprised if Pāṇini accounts for the accent and extra-length of the final vowel in a particular utterance in terms of social classes-the facts of real world (8283).¹⁰¹ The kāraka notions are established on various bases and employed in turn to explain linguistic facts almost at all levels. In conclusion we may then say that Pāṇini is conscious of the fact that his dealing with a phenomenon that is deeply associated with human behaviour in general and at the same time based in smaller social groups. Thus his theoretical framework, whatever it may have been, is hedged and circumscribed by the actual facts of the real world. His statements are thus at once general and particular, unique.

FOOTNOTES

I express my thanks to Paul Kiparsky with whom I discussed the main substance of this paper.

In quoting a sūtra from aṣṭādhyāyī, the first figure stands for the adhyāya (chapter), the second for pāda (section) and the rest for sūtra (rule). Thus 61192 means chapter *six*, section *one* and rule *one hundred and ninety two*:

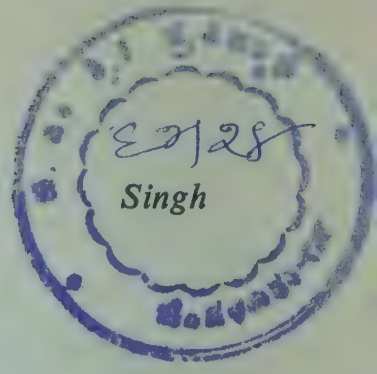
1. We do not treat *hetu* as a separate kāraka for the reasons we outline below. Pāṇini defines *hetu* as *tat-prayojako hetuṣca* "the prompter (causer) of that (*kartā*) is called *hetu* also besides *kartā* (1455)." He thus assigns two technical terms (*saṃjñā*) to the causer of *kartā*, namely, *hetu* and *kartā*. Commenting on the above sūtra the *kāśika* observes: "The thing that prompts the *kartā* is the kāraka called *hetu* and it bears the name of *kartā* also by reading "also" (*ca*) in the sūtra. He causes him to do, causes him to carry (*svatantrasya prayojako yo arthaḥ tat kārakam hetu-saṃjñam bhavati. cakārāt karṭṭ-saṃjñam ca. saṃjñā-samāveśārthaḥ cakārah. kurvāṇam prayuñkte--kārayati, hārayati*). Further it adds, "By virtue of being *hetu*, it introduces *ṇic* (causal suffix) and being *kartā* it is expressed by *karṭṭ* suffix (*hetutvad ṇico nimittam karṭṭtvāc ca karṭṭpratya-yenocyate*)." Pāṇini's intention in designating the causer of *kartā* by two labels is to invoke two grammatical operations, viz. introduction of *ṇic* (causal) suffix by 3126 and representing it grammatically by *vibhakti* suffixes appropriate to *kartā* (1378 and 2318).

Suppose we concede for a moment that *hetu* is a separate kāraka in its own right, the question arises how it is represented

linguistically. Pāṇini has described the linguistic representation of kārakas in 231 ff, 1378, 3467. But he has not talked of hetu anywhere in this regard. In fact both kartā and hetu have identical representation always whether by 1st or 3rd vibhakti. We have no instance in the language where hetu is represented differently from kartā.

In fact for all practical purposes, Pāṇini uses kartā as a covering term for both kartā and hetu. He uses hetu only when he has to refer to its exclusive connotation, viz. prompter of kartā; otherwise he subsumes it under kartā. Even in instances where he could have justifiably introduced hetu he uses kartā. Note the following: "The ātmanepada suffix is used with a verbal stem taking ṇi (causal suffix) if what is karma in a-ṇi (non-causal) becomes *kartā in ṇi (causal)* except in case of verbs meaning 'remember with regret.' (ṇer, aṇau yet karma ṇau cet sa *kartanādhyāne* 1363). "The kāraka relation with the causal verb here is called *kartā* instead of hetu. Also, "the kartā of the non-causal forms of √hṛ "carry" and √kr "do" is optionally karma in the causal (otherwise it remains kartā) (hṛkror any-starasyām 1453)." In conclusion we assert that to denote kāraka relations the prompter of kartā is always subsumed under kartā and is never deployed separately as hetu. The notion of hetu is set up to introduce certain grammatical operations such as introduction of ṇic, etc.

2. 1424 dhruvam apāye apādānam
3. 1432 karmaṇā yam abhipraiti sa sampradānam
4. 1442 sādhakatanam karaṇam
5. 1445 ādhāro adhikaraṇam
6. 1449 kartur ipsitatamam karma
7. 1454 svatantraḥ kartā
8. See mahābhāṣya, Vol. 2, Rohtak, p. 417 f.
9. 1425 bhi-trārthānām bhayahetuḥ
10. 1427 vāraṇārthānām īpsitaḥ
11. 1428 antardhau yenādarśanam icchati
12. 1429 ākhyātopayoge
13. 1433 rucyarthānām prīyamāṇah
14. 1436 sprher īpsitaḥ
15. 1447 krudha-druherśyāsūyārthānām yam prati kopaḥ
16. 1426 prājer asoḍhaḥ.



17. 1430 janikartuh prakṛtiḥ
1431 bhuvah prabhavah
18. 1434 ślāgha-hnuṇ-śthā-śapām jñīpsyamānaḥ
19. 1435 dhārer uttamarnaḥ
20. 1439 rādhikṣyor yasya vipraśnaḥ
21. 1443 divaḥ karma ca
22. 1444 parikrayaṇo sampradānam anyatarasyām
23. 1438 krudha-druhor upasṛṣṭayoḥ karma
24. 1446 adhi-śīn-sthāsām karma
1447 abhi-nī-viśaś ca
1448 upānvadhyānvasaḥ
25. 1440 pratyāñbhyām śruvaḥ pūrvasya kartā
26. 1441 anupratigṛṇaś ca
27. we have often skipped the rules of derivation of morphological forms. It would have simply beclouded the presentation of main arguments.
28. See note 1
29. 2318 kartr̥-karaṇayos tṛtiyā
30. 1452 gati-buddhi-pratyavasānārtha-śabdakarmā-karmakāṇām aṇi karta sa nau.
31. 1453 hṛkror anyatarasyām
32. 1450 tathāyuktam cānipsitam
33. 1451 akathitañ ca
34. jugupsā-virāma-pramādārthānām upasaṃkhyānam,
“The objects associated with the verbs meaning ‘aversion,’
‘cessation’ and ‘negligence’ should also be included.”
35. Cardona, George Pāṇini’s syntactic categories, *Journal of Oriental Institute*, Baroda, Vol. XVI (1967), p. 212.
36. Mme. Rocher reported by Cardona, op. cit. p. 214
37. These are enumerated in 412.
38. 231 anabhihite
39. 232 karmaṇi dvitīyā
40. 2313 caturthi sampradāne
41. 2318 kartr̥-karaṇayos tṛtiyā
42. 2328 apādāne pañcamī
43. 2336 saptamy adhikaraṇe ca
44. 2314 kriyārthopapadasya ca karmaṇi sthāninaḥ
45. 3469 laḥ karmaṇi ca bhāve cākarmakebhyaḥ

46. 3193 kṛd atīñ
47. 3467 kartari kṛt
48. 31133 ṇvul-tṛcau
49. 32181 dhaḥ karmaṇi śṭran
50. 32182 dāmnī-śasa-yu-yuja-stu-tuda-si-sicamih-pat-daśa-nahaḥ,
karaṇe.
51. 3473 dāś-goghnaṇ sampradāne
52. 3474 bhīmādayo apādāne
53. 3476 kto adhikaraṇe ca chrauvya-gati-pratyavasānārthebhyaḥ
54. 4182 samarthānām prathamād vā
55. 4466 tad asmai dīyate niyuktam
56. 4218 dadhnaṣ ṭhak
57. 211 samarthaḥ padavidīḥ
58. 2134 karṭṛ-karaṇe kṛtā bahulam
59. 2124 dvitīyā śṛitātīā-patita-gatātyasta-prāptāpannaiḥ.
60. 2137 pañcamī bhayena
61. 2143 kṛtyair ṛne
62. dhanuṣā vidhyati iti, apāya-vivakṣayā vinā dhanuṣo vyadheḥ
sādhaktamatvābhāvāt samjñādvaya prasaṅge paratvāt karaṇa-
samjñā bhavati (kaiyyaṭa); apāyeti - dhanur - nirgata-śara-
karaṇak-vedhe dhanuṣah sāḁṣāt karaṇatāvsambhavad avaśyam
nirgamana-pūrvake vedhe vidhyatim varttayitvā tad-ghaṭaka-
nirgamanasya avadhi bhāvena eva nīrvarttakam dhanur vedho
paramparayā karaṇam iti avaśyam vācyam iti ubhayorḥ prāptir
iti bhāvaḥ (nāgojibhaṭṭa)
63. 232 karamaṇi dvitīyā
64. 1313 bhāva-karmaṇorḥ
65. 2318 karṭṛ-karaṇayos tṛtīyā
66. 3.187 karmavat karmaṇā tulyakriyāḥ
67. 3167 sārvdhātuke yak
68. 1378 ṣeṣāt kartari parasmaipadam
69. 61192 acaḥ karṭṛyaki
70. 3162 acaḥ karakartari
71. karmastha-bhāvakānām karmastha-kriyāṇām ca kartā karmavad
bhavati. (kāsikā on 3187).
72. 1374 ṇicas ca (kartrabhiprāye kriyā-phale)
73. 1367 ṇer aṇau yat karma ṇau cet sa kartṣṇādhyāne

74. nanu cātra karmakartari mūlodāharaṇāni tatra karmavad-
bhāvena eva siddham ātmanepadam kim artham idam ucyate.
karmasthabhāvakānām karmastha-kriyāṇām ca karmavad
atideśo vijñāyate. kartṛsthārtho ayam ārambhaḥ tathā ca ruhiḥ
kartṛsthakriyaḥ dṛśiḥ kartṛstha-bhāvaka udā-hṛtaḥ (kāśikā
on 1367).
75. See Mahabhaṣya Rohtak, Vol. 2, p. 380 ff.
76. 318 supa ātmanaḥ kyac
77. 3110 upamānād ācāre
78. 3111 kartuḥ kyañ salopaś ca
79. 317 dhātoā karmaṇaḥ samānakartṛkād icchāyām vā.
80. 3118 sukhādibhyaḥ kartṛ-vedanāyām
81. 3310 tumun-ṇvulau kriyāyām kriyārthāyām
82. 31133 ṇvul tṛcau
83. 3312 aṇ karmaṇi ca
84. 321 karmaṇy aṇ
85. 8410 vā bhāvakaraṇayoh (pānam)
86. 8248 aṇco anapādāne
87. 61192 acaḥ kartṛyaki
88. 6248 tṛtiyā karmaṇi
89. 8151 gatyarthaloṭā lṛṇ na cet kārakam sarvānyat
90. 3319 akartari ca kārake samjñāyām
91. 5442 bahvalpārthācchas kārākād anyatarasyām
92. 5445 apādāne cāhīyaruhoḥ
93. 3452 apādāne parīpsāyām
94. 3279 kartary upamāne
95. 3185 karaṇe yajāḥ
96. 1337 kartṛsthe cāśarīre karmaṇi
97. 1388 aṇāvakarmakāc cittavat-kartṛkāt
98. 2213 adhikaraṇa-vācinā ca
2215 tṛjakābhyām kartari
99. 2216 kartari ca.
100. 287 saptamī-pañcamyau kārakamadhye
101. 8283 pratyabhivāde aśudre (vākyasy ṭeh pluta udāttaḥ)

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EXCEPTIONS AND SYNCHRONIC ANALOGY IN SANSKRIT.¹

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0.1: The problem of exceptions to otherwise productive phonological rules and of how to deal with them has for a long time and frequently attracted the attention of linguists. For while it is quite clear that some exceptions are too limited and idiosyncratic in occurrence to merit anything more than marking a given lexical item as an exception to a particular rule, in many other cases such an approach appears somewhat unsatisfactory because it fails to properly capture certain *morphological* regularities or principles which may in fact make the apparent exceptions quite regular and non-exceptional. This has been most plausibly argued in a recent paper ('A wider perspective on apparent phonological exceptions') which Karen Dudas and Margie O'Bryan read at the 1972 LSA Summer Meeting in Chapel Hill.

In the present paper I will refrain from going into a detailed discussion of the views presented in that paper (or in any other papers dealing with the subject). I will rather limit myself to the discussion of a specific case which, as far as I can see, is interesting and challenging in that none of the hypotheses so far proposed concerning the nature of morphological predictable exceptions seems to be able to deal with it in a satisfactory manner.^{1a}

I will propose that there is, however, a satisfactory manner in which this case can be dealt with, namely by invoking what I would like to call *synchronic analogy*

0.2: The stage of the Sanskrit language with which the present paper is concerned can be labeled Late Vedic. It is the stage of the language which post-dates the late Rig-Vedic change of *iy* and *uv* to *y* and *v* in the environment between (non-initial) single consonant

and vowel; cf. *vṛkiyas* > *vṛkyàs* 'of a she-wolf'.² And it is the stage of the language which precedes the (optional) Epic and Classical replacement of root-final *-ay-* by *-e-* in the nominal *-ya-* formations (gerunds, gerundives, and derived nouns) of verbal roots in underlying root-final */-ai-/*; cf. Brāhmaṇa *jay-ya-* 'to be conquered' vs. Epic, Class. *je-ya-* (id.), from */jai-/* 'conquer'; but also Brāhm. *śay-ya-* 'bed' and Class. *-śay-ya-* 'lying', from */śai-/* 'lie'.³

1.1 : As all the other stages of Sanskrit, so also Late Vedic has a constraint against the occurrence of vowel clusters on the surface, at least in internal sandhi.⁴

On the other hand, again as all the other stages of Sanskrit, Late Vedic also has independently required underlying vowel clusters.

Thus, in past tense formations of vowel-initial roots, vowel clusters arise by the independently required prefixation of the 'augment' */a-/* before the root-initial vowel, as in */a-ad-ma/* 'we ate'

Underlying vowel clusters are also required in the case of ('variable') formations which show surface alternations of the type *i* (∞ *iy*) ∞ *y* and *u* (∞ *uv*) ∞ *v*, the occurrence of one or the other of these alternants being determined by the phonetic environment. For there are other ('invariable') formations with invariable surface *y* and *v*, even in the phonetic environments where the 'variable' formations have phonetically conditioned *iy* and *uv*, and without any occurrence of surface *i* and *u*. Compare the difference between pl. 2 pres. ind. act. *kr̥-ṇu-tha* 'do', *āp-nu-tha* 'reach' (with *u* in the environment *C* — *C*) vs. *kr̥-ṇv-anti* (with *v* in the environment *C*₁ - *V*) and *āp-nuv-anti* (with *uv* in the environment *C*₂ - *V*) on the one hand, and pl. 2 pres. ind. mid. *krī-ṇī dhve* 'buy' and *yu-ṇ-(-g)-dhve* 'yoke' (with *v* both in the environment *C*₁—*V* and in the environment *C*₂—*V* (and *C*₃—*V*)). This difference would seem best captured by setting up underlying forms like */kr-nu-tha/*, */aap nu-tha/*, */kr nu-anti/*, */aap nu-anti/* with */u/* throughout, even before vowel, vs. pl. 2 pres. ind. mid. */-dhvai/*, with */v/*.⁵

1.2 : The following rules generally serve to eliminate these underlying vowel clusters and thus to implement the constraint against the occurrence of vowel clusters on the surface.⁶

(a) Like-Vowel Contraction: *V₁V₁...V₁→V̄₁*. Compare the following derivations.

- (i) */a-ad-ma/→ādma* 'we ate'
- (ii) */abhi-i-ta/→abhīta* 'gone toward'

- (iii) /vi-iikṣ a-ti/ → *vikṣati* 'looks at'⁷
- (b) Glide-Formation: $\left[\begin{smallmatrix} V \\ + \text{hi} \end{smallmatrix} \right] \rightarrow [+ \text{glide}] // V$, a mirror image rule. Compare the following derivations.
- (iv) /i-anti/ → *yanti* 'they go'; cf. *i-ta-* 'gone'.
- (v) /ai-a-/ → *aya-* 'going'⁸
- (vi) /-ai-ya-/ → *-ayya-* (gerund) 'having gone'⁸
- (vii) /dhii-as/ → *dhiyas* 'of meditation'; cf. sg. N *dhī-s*.

Note that the above rules are governed by the following phonological principles.

(1) Glide-Formation takes precedence over Like-Vowel Contraction in vowel clusters of unlike vowels; cf. derivation (vii). That the precedence of Glide-Formation over Like-Vowel Contraction in derivation (vii) is not simply a consequence of the number of vowels contained in the cluster can be seen in derivation (iii) which, like (vii), has a triple vowel cluster in the underlying representation.

(2) Elsewhere, Like-Vowel Contraction takes precedence over Glide-Formation; cf. derivation (iii).

(3) Glide-Formation is governed by the open-syllable or CVCVCV principle. That is, given a choice, that application of Glide-Formation is preferred which produces open, rather than checked syllables and which avoids the introduction of consonant clusters. Thus, derivation (vii) is acceptable, while a derivation /dhii-as/ → *dhyias** would not be acceptable.

(4) Glide-Formation is constrained by 'Sievers's Law':⁹ The derivation must not introduce a sequence containing a cluster of more than two consonants.¹⁰ Thus, derivation (viii) below is acceptable, while derivation (ix) is not.

(viii) /kr-nu-anti/ → *kṛṇvanti* 'they do'¹¹

(ix) /aap-nu-anti/ → *āpnvanti* 'they obtain'

(c) Glide-Insertion: $\phi \rightarrow \left[\begin{smallmatrix} + \text{glide} \\ \alpha \text{ front} \end{smallmatrix} \right] / \left[\begin{smallmatrix} V \\ - \text{low} \\ \alpha \text{ front} \end{smallmatrix} \right] - V$.

This rule is a low-level clean-up rule eliminating any surviving vowel clusters, as in derivation (x) whose input 'survived' the other two rules eliminating vowel clusters: Like-Vowel Contraction because it is not applicable, and Glide Formation because it is blocked by 'Sievers's Law'.

(x) /aap-nu-anti/ → *apnu-v-anti*.

1.3: In addition, the following rules operate on sequences containing underlying vowel clusters.

(d) *i/u-Drop*:

$$\left[\begin{array}{c} V \\ - \text{long} \\ + \text{high} \\ \alpha \text{ front} \end{array} \right] \rightarrow \emptyset / VC - \left[\begin{array}{c} + \text{glide} \\ \alpha \text{ front} \end{array} \right] V^{12}$$

(xi) (/aa-dhii-as/ → /aa-dhiy-as/ →) /ā-dhiy-as/ → *ādhyas* 'of meditation'; cf. derivation (vii) above.

(e) *i-Elimination*: *i* → ∅ / *y* — C. This rule would at first blush appear to be optional; cf. the following derivation.

(xii) /bhāii-tum/ → /bhāyi-tum/ → /bhay-tum/ beside unchanged *bhayitum* 'to fear'.

(f) *Diphthong Contraction*: $\begin{array}{l} av \rightarrow o \\ ay \rightarrow e \end{array} / - \left\{ \begin{array}{c} C \\ \# \end{array} \right\}$, where C ≠ *y*. Compare the following derivations.

(xiii) /bhay-tum/ (from (xii)) → *bhetum*.

(xiv) /śrau-tum/ → /śrav-tum/ → *śrotum* 'to listen'.

(xv) /-ay-ya-/ (from (vi) above) and /drau-ya-/ → /drav-ya-/ 'to be run', however, remain as *-avya-* and *dravya-*, since the consonant following the diphthong is *y*.¹³

2.1: While the above rules correctly relate the majority of underlying forms containing vowel clusters to their corresponding surface forms, and while the forms to which they apply are not limited to any specific morphological categories, but rather cover the whole wealth of nominal, pronominal, and verbal inflection and derivation, there are a few morphological categories where they exceptionally, but categorially predictably fail to apply, or apply in environments where they should not apply.

2.2: Thus, in the athematic middle voice optative, the first person singular, such as /aas-ii-a/ 'would sit', regularly fails to undergo Glide-Formation and *i/u-Drop* and to surface as *āsya** etc. Instead, we find surface forms like *āsiya*.

2.3: Similarly, in the thematic optative, one should expect such forms as sg. 1 pres. act. opt. /bhar-a-ii-am/ 'would carry', pl. 3 pres. act. opt. /bhar-a-ii-ur/, and sg. 1 pres. mid. opt. /bhar-a-ii-a/ to undergo both expansions of the 'mirror-image' rule Glide-Formation and to surface as *bharayyam**, *bharayyur**, *bharayya**, since before *y*, Diphthong Contraction is not applicable. Instead, we find surface forms like *bhareyam*, *bhareyur*, *bhareya*.

2.4: A similar situation is found in the comparative of the two roots, *pri-* 'dear' and *śri-* 'beautiful': The underlying forms

/praii-yas-/ and /śraii-yas-/ should, with application of Glide-Formation (hence/praiiyas-/, /śrayi-yas-) and *i/u*- Drop, yield the surface forms *prayyas-* and *śrayyas-*.¹⁴ Instead, we find the forms *preyas-* and *śreya-*.

2.5: While in derivations like (xii) / (xiii) above, the application of *i*- Elimination appears to be optional, permitting both surface forms like *bhayitum* and surface forms like *bhetum*, the rule appears to be obligatory in the superlative and in those forms of the thematic optative whose personal endings begin with a consonant.

Thus, underlying /praii-iṣṭha-/ 'dearest' and /śraii- iṣṭha-/ 'most beautiful', after undergoing a special rule affecting certain roots, the so-called *seṭ*-roots, and eliminating prevocalic underlyingly root-final *i*,¹⁵ should with Glide-Formation, optional application of *i*-Elimination, and Diphthong Contraction surface either as *prayiṣṭha* *śrayiṣṭha*- or as *preṣṭha*-, *śreṣṭha*-; cf. the following sample derivations. Late Vedic, however, only offers *preṣṭha*- and *śreṣṭha*-.

	/praii-iṣṭha-/	/praii-iṣṭha-/
Set-Rule	prai-iṣṭha-	prai-iṣṭha-
Glide-Formation	pray-iṣṭha-	pray-iṣṭha-
<i>i</i> -Elimination	————	pray-ṣṭha-
Diphthong Contraction	————	pre-ṣṭha-

Similarly, underlying forms like sg. 2 pres. mid. opt. /bhar-a-ii-thaas/ should be expected to surface both as *bharayithās* and as *bharethās*. However, only the latter type of forms is found.

2.6: On the other hand, in the infinitives of causative formations (and other formations with present suffix -aya-), such as /vardh-ay-i-tum/ 'cause to grow', no surface forms like *vardhetum* (with *i*-Elimination and subsequent Diphthong Contraction, as in *preṣṭha* above) can be found. Instead, we only find forms like *vardhayitum*. That is, in these formation, *i*-Elimination obligatorily fails to apply.

3.1 Under the traditional approach to the treatment of exceptions, the above formations would simply be labeled exceptional. This might (or might not) be accompanied by a statement giving the presumable motivation for the exceptionality of a given formation.

3.2: Thus, in the case of the causative infinitives, it would propbably be stated that they are categorial exceptions to *i*-Elimination. The motivation for this exceptional behavior could be given as the surface retention of the causative marker -ay- found elsewhere (as in the present *vardhaya-ti*). For if *i*-Elimination had applied to the underlying /vardh-ay-i-tum/, the resulting /vardh-ay-tum/

would have been subject to Diphthong Contraction, yielding a surface form *vardhetum*, without the characteristic (surface) marker *-ay-*.

3.3: In the case of the superlatives and of the thematic optative forms with consonant-initial personal endings, it would probably be claimed that these formations as a category exceptionally undergo *i*-Elimination obligatorily. However, no motivation for this obligatory application of *i*-Elimination could be adduced.

3.4: As for the comparatives, *preyas-* and *śreyas-* (instead of *prayyas-**, *śrayyas-**) and thematic optative formations like *bhareyam*, *bhareyur*, *bhareya* (instead of *bharayyam**, *bharayyur**, *bharayya**), it could be claimed that in these formations Dipathong Contraction applies exceptionally even in the environment before *y* (where normally it is blocked).

In the comparatives, the motivation for this exceptional application of Diphthong Contraction may be considered to consist in the fact that as a result the surface root vocalism of the comparatives becomes identical with that of the corresponding superlatives (where *e* is regular): *pre-yas-* = *pre-ṣṭha-*, *śre-yaa-* = *śre-ṣṭha-*.

In the thematic optatives, the motivation for the exceptional application of Diphthong Contraction can be said to consist in the fact that as a result the surface thematic optative marker *-e* (which is regular in those forms which have consonant-initial personal endings) prevails throughout the paradigm; cf. the following surface paradigms.

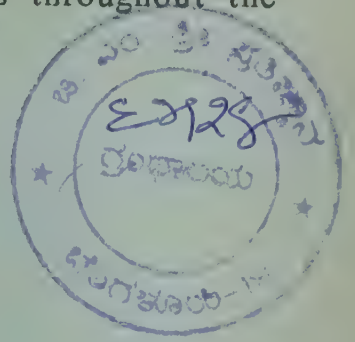
active	middle
<i>bhareyam</i>	<i>bhareya</i>
<i>bhares</i>	<i>bharethās</i>
<i>bharet</i>	<i>bhareta</i>
<i>bharema</i>	<i>bharemahī</i>
<i>bhareta</i>	<i>bharedhvam</i>
<i>bhareyur</i>	<i>bhareran</i>

3.5: Similarly, it would probably be claimed that the first singular athematic middle optative in */-ii a/* is a categorial exception to Glide-Formation, that instead, it exceptionally undergoes Like-Vowel Contraction of */ii/* to */ī/* (in the environment before the *unlike* vowel */a/*), and that subsequently the resulting vowel cluster */īa/* is eliminated by Glide-Insertion (whence surface *-īya*).

The motivation for this exceptional behavior can be said to consist in the fact that as a result the surface marker of the rest of

the (athematic middle optative) paradigm prevails throughout the paradigm; cf. the following sample paradigm.

āsiya
āsīthās
āsīta
āsīmāhi
āsīdhvam
āsīran



4.1: While the 'exception hypothesis' discussed in sections 3.1-5 above may perhaps be considered to sufficiently account for the exceptional behavior of the causative infinitives, the superlatives and comparatives, and those forms of the thematic optative which have consonant-initial personal endings, it fails to satisfactorily account for the exceptional behavior of the first singular athematic middle optative and of those forms of the thematic optative whose personal endings begin with a vowel.

4.2: As far as the (perhaps rather trivial) aspect of formalism is concerned, the following two problems arise.

(a) Which morpheme(s) should be marked for the exceptional behavior of the thematic optative, the thematic vowel /-a-/ or the optative marker /-ii-/ ? After all, *both* suffixes are involved in the exceptional contraction of /-a-yy-/ to *-ey-*.

(b) Perhaps more importantly, if the optative marker /-ii-/ is marked as [– Glide-Formation] and [+ Like-Vowel Contraction (/ – unlike vowel)] in order to account for the exceptional behavior of the first singular of the *athematic* (middle) optative, this marking would wrongly predict that in the *thematic* optative, underlying /-a-ii-am/ (etc.) should develop into /-a-ī-am/, rather than the /-ayyam/ required by the surface form *-eyam*.

4.3: What is, however, of much greater importance than these 'formalistic' objections (which could probably be met by some kind of ad-hoc formulations) is the fact that the 'exception hypothesis' fails to make the generalization that the motivation for the exceptionality of forms like *āsiya* is the same as that for the exceptionality of forms like *bhareyam*, namely the *avoidance of surface alternations in the optative marker* (within the same paradigm).

And because of the *disparate* nature of the exceptional behavior of the two types of formations - there is not even a single rule which these two formations agree on exceptionally applying or

failing to apply - the failure of the (traditional) 'exception hypothesis' to capture this generalization would seem to be inherent and inevitable.

5.1: A new concept appears to be required in order to satisfactorily capture the generalization that the *same* motivation underlies the (disparate) exceptionalities of the athematic middle optative and of the thematic optative.

This new concept, I submit, is *synchronic analogy*: a *morphological principle* (which evidently cannot be captured by a (single) rule!), stating (in this particular case) that 'In the athematic middle optative and the thematic optative, the regular surface marker of the majority of forms (i. e. of forms which have a consonant-initial personal ending) is to prevail throughout the paradigm.'

This *morphological principle*, then, *governs* (or entails) *the exceptional application or nonapplication of rules*, in this particular case, the exceptional nonapplication of Glide-Formation and the exceptional application of Like-Vowel Contraction in the first singular of the athematic middle optative, and the exceptional application of Diphthong Contraction in the first singular active and middle and the third plural active of the thematic optative.

5.2: Consideration of additional data would seem to confirm the view that the present approach is on the right track:

In the (athematic) verbs in underlying /-(n) au-/ → /-(n) u-/ by ø-grade formation, the following middle optative paradigms are found.

<i>kṛṇvīya</i>	<i>āpnuvīya</i>
<i>kṛṇvīthās</i>	<i>āpnuvīthās</i>
<i>kṛṇvīta</i>	<i>āpnuvīta</i>
<i>kṛṇvīmahi</i>	<i>āpnuvīmahi</i>
<i>kṛṇvīdhvam</i>	<i>āpnuvīdhvam</i>
<i>kṛṇvīran</i>	<i>āpnuvīran</i>

The corresponding underlying forms are as follows.

/kr-nu-ii-a/	/aap-nu-ii-a/
/kr-nu-ii-thaas/	/aap-nu-ii-thaas/
etc.	etc.

These should, by regular application of rules, yield the surface forms indicated in the following derivations.

	/kr-nu-ii-a/	/aap-nu-ii-a/
Like-Vowel Contr.	————	(āp-nu-ii-a)
Glide-Formation	<i>kṛṇuyya</i> * 16	<i>āpnuuyya</i> * 16
	/kr-nu-ii-thaas/	/aap-nu-ii-thaas/

Like-Vowel Contr.	(kr-nu-ii-thās)	(āp-nu-ii-thās)
Glide-Formation	kṛ-ṇu-yi-thās*	āp-nu-yi-thās*
(i-Elimination) ¹⁷	kṛṇuythās* ¹⁸	āpnuythās* ¹⁸

As in the case of the athematic middle optative forms so far discussed, so also here, the actually attested surface forms can be derived by the exceptional application or nonapplication of Like-Vowel Contraction and Glide-Formation. However, because of the different phonological environment(s), different segments (namely the *first* /i/ of the optative marker /-ii-/), an additional morpheme (namely /-(n)u-/), at least where 'Sievers's Law' permits, and additional persons of the paradigm (sg. 2 – pl. 3) are affected by the exceptional (non-)application of Glide-Formation.

Still, the *principle* motivating this exceptional (non-)application of rules is essentially the same as before, namely that 'In the athematic middle optative and the thematic optative, the regular surface marker of the majority of forms (i. e. of the forms which have consonant-initial personal endings) found in the majority of subclasses (i. e., in the athematic verbs, in all subclasses other than the (n)u-verbs) is to prevail throughout the paradigms (of all the subclasses).'

5.3: Since the new concept of synchronic analogy was clearly needed in order to make the correct generalizations about the motivation of the exceptional (non-) application of rules in the optative formations so far discussed, the question arises whether it should be invoked in *all* cases where the exceptional application or nonapplication of rules can be attributed to such a general morphological principle.

There are some indications that to do so would at least be heuristically useful, in that it would force the phonologist to more strongly consider morphological evidence in phonological analysis.

Thus, in the case of the discrepancies between the apparently optional application of *i*-Elimination in infinitives of the type /bhāii-tum/ → *bhayitum*/*bhetum*, the obligatory nonapplication in causative infinitives (/vardhay-i-tum/ → *vardhayitum*), and the obligatory application in the thematic optative (/bhar-a-ii-thaas/ → *bharethās*) and the superlative (/prāii-iṣṭha-/ → *preṣṭha-*), the concept of synchronic analogy seems to facilitate a clearer understanding of the phonological facts:

In the case of the causative infinitives, the nonapplication of *i*-Elimination can be *motivated*, namely as due to the principle that 'In the causatives, the marker /-ay-/ found in the majority of forms is to prevail also in the infinitive'. That the nonapplication here is

obligatory can be attributed to the fact that the principle is *strong* because the synchronic analogy works *within the paradigm*.

Also in the case of infinitives like /bhāi-tum/ → *bhayitum*/*bhetum*, the nonapplication of *i*-Elimination can be motivated, namely as due to the synchronic analogy of the infinitives of other 'set-roots'¹⁹ which, because they do not meet the environment for the rule, cannot undergo *i*-Elimination; cf. /bhai-tum/ → *bhavitum* 'be(come)'. That is, the nonapplication of *i*-Elimination in these infinitives can be attributed to the principle that 'In the infinitives of set-roots, the underlying characteristic /i/ of the set-roots is to remain on the surface.' In contradistinction to the principle governing the nonapplication of *i*-Elimination in the causatives, the present principle is *weak* (hence only optional) because the synchronic analogy works on derivationally (and underlyingly) *parallel formations*, not within the paradigm.

As for *bhetum*, as well as the thematic optative (cf. *bharerhās*) and the superlative (cf. *preṣṭha-*), no morphological principle or synchronic analogy can be found which would motivate the application (or nonapplication) of *i* Elimination. This fact can be taken to indicate that these formations show the *unmarked, morphologically ungoverned application of rules*. It can therefore be concluded that *i*-Elimination in fact is not optional (as thought earlier), but that in principle it is obligatory unless overridden by synchronic analogy).

(Also in the case of the comparatives *preyas-*, *śreyas-*, the exceptional application of Diphthong Contraction can be attributed to synchronic analogy, namely the principle that 'The comparative (of *pri-* and *śrī-*) is to have the same surface root shape as the superlative.' However, in this case, the concept of synchronic analogy does not seem to lead to any greater insights or more accurate generalizations than the traditional 'exception hypothesis' formulation.)

5.4: Although the concept of synchronic analogy thus does appear to be heuristically more useful than the traditional treatment of exceptions, by greatly facilitating a clearer understanding of the facts, it cannot be claimed that a proper understanding of the facts, or at least the proper *formulation* of the facts, is impossible under the traditional, morphologically 'motivated' approach. For once the correct insights have been made, it is quite possible to account for the facts by stating that *i*-Elimination is an obligatory rule, but that, for morphological reasons, set-roots are optional, and causatives, obligatory exceptions to it.

5.5: It can thus be concluded that it is only under certain, very special circumstances, such as the *disparate* exceptionalities of the athematic middle optative and of the thematic optative, that the concept of synchronic analogy is clearly required (in order to capture the correct generalizations). Elsewhere, the concept, though in some cases probably heuristically more useful, is in effect merely a 'notational variant' of the traditional, morphologically 'motivated' treatment of exceptions.

FOOTNOTES

1. An earlier version of this paper was read on December 21, 1972, before the Linguistics Seminar of the University of Illinois. At the next meeting of the Linguistics Seminar, on January 4, 1973, Ronnie Wilbur read a paper ('An alternative to phonological description: morphological explanation', a summary of her 1973 University of Illinois Ph. D. dissertation = Wilbur 1973. [a revised version of this paper appears as one of the contributions to the present volume]), in which, on the basis mainly of *cross-language* evidence, she came to essentially the same conclusions as those which, in the present paper, have been reached on the basis of the *language-internal* evidence of Sanskrit. The fact that thus essentially the same conclusions were reached independently, by two different linguists, working with quite different data, is remarkable and would seem to further support the view that these conclusions must be on the right track. (For specific Sanskrit evidence, not considered by Ronnie Wilbur, in favor of her claim that an 'identity constraint' or, in my terminology, 'synchronic analogy' may govern the (exceptional) application or nonapplication phonological rules in the derivation of reduplicated formations, cf fn. 13 below.)
- 1 a Except, of course, for Wilbur 1973; cf. the preceding footnote.
2. Concerning the appearance of the first traces of this change in the late first and tenth books of Rig-Veda, cf. Renou 1957:4 and Wackernagel 1896:288. For the discussion in the present paper it is of crucial importance that this change, and the attendant changes in synchronic rules and underlying representations, be completed. As a result, the synchronic claims made in this paper will by necessity have to be different from those which were made in Kiparsky 1972 on the basis of 'pure' Rig-Vedic evidence. A critical discussion of Kiparsky's views and

a comparison of his claims with those made in this paper would therefore appear to be pointless.

3. There is, to be sure, one (early) Late Vedic instance of a nominal *-ya-* formation with root-final surface *-e-*, namely *pre-he-ya* (AV 5:10:3c), instead of expected *pra-hay-ya**. However, this may perhaps be due to a later emendation. Compare on this count the Rig-Vedic occurrence of *saha-śéy-yaya* (RV 10:10:7b), whose *-ey-y-* could perhaps, a priori, be considered the result of a genuine historical process of blending older *-ay-y-* with innovated *-e-y-*. However, metrical evidence—the word occurs in the cadence of a triṣṭubh—indicates that the word must be read as *śayiyaya*, with an extra syllable (and consequently with differing root vocalism) and that the attested *-śeyyāya*, along with its root vocalism, thus clearly is the result of a later emendation.
4. The surface diphthongs which customarily are transliterated as *ai* and *au* are apparent exceptions to this constraint. However, it is quite reasonable to assume that the second element of these diphthongs was semivocalic [i], [u], rather than fully vocalic [i], [u]. Cf. Wackernagel 1896:40 for examples which seem to indicate that, at least before a following *y*, *ai* was pronounced with a semivocalic offglide. – Note, however, that some vowel clusters do occur on the surface in external sandhi; cf. *puruṣa uvāca* ‘the man spoke’ from underlying /*puruṣa-a u-uak-a*/.
5. It is beyond the scope of the present paper to discuss (the motivation of) independently required underlying forms and phonological developments which are not germane to the discussion of this paper. Here, as elsewhere, I will therefore refrain from commenting on such differences between underlying and surface forms as those between /*kr-nu-tha*/ (with nonsyllabic *r* and nonretroflex *n*) and surface *kṛṇutha* (with syllabic *ṛ* and retroflex *ṇ*).
6. These rules can thus be said to ‘conspire’ to eliminate vowel clusters on the surface. For a definition of the term ‘conspire’, cf. Kisseberth 1970.
7. For the motivation of the underlying sequence, rather than feature representation of vowel length, cf. derivation (vii) which clearly presupposes segment representation. On the general problem of the representation of vowel length in generative phonology, cf. Kenstowicz 1970.

8. From the same root as that found in *i-ta-*. Underlying /ai-/ and /i-/ are related to each other by the morphophonemic process of ablaut.
9. This is the (indirect) synchronic reflex of the historical process called 'Sievers's Law'.
10. Glide-formation (of *u*) is also blocked after single initial *y* and *r*, since *yv-** and *rv-** are nonpermissible clusters (in initial environment); cf. pl. 3 /yu-anti/ 'unite' → *yuvanti* (not *yvanti**), /ru-anti/ 'they cry' → *ruvanti* (not *rvanti**). — 'Sievers's Law' is operative also in ablaut; cf. the *n*-stem genitive singular *rāj-ñ-as* 'of a king' (with *ø*-grade of the stem-forming suffix /-an-/) vs. *ātm-an-as* 'of the spirit' (without *ø*-grade, since the application of *ø*-grade formation would produce the triple consonant cluster cluster -*tmn-*). Actually, note that in ablaut, there is a constraint also against the introduction of initial clusters containing two consonants; cf. the nonapplication of *ø*-grade formation in the participle *pan-na-* 'fallen' (of the root /pad-/) vs. its regular application in the participles of roots whose underlying form is not of the shape /CaC-/, as in *i-ta-* 'gone' (of the root /ai-/). — It is true, it might be claimed that in all of these cases we are dealing with epenthetic vowels, rather than with vowels which failed to undergo a particular derivation because undergoing it would have resulted in a nonpermissible cluster. However, first of all, if we were really dealing with epenthesis, then the remarkable fact that the epenthetic vowel always is identical with the underlying vowel which allegedly was eliminated by an earlier rule would have to be attributed to mere coincidence. More importantly, in the case of underlying /i/ and /u/, it can be shown that the surface appearance of these vowels after consonant clusters cannot be the result of epenthesis before *y* and *v*. For if such an epenthesis were indeed a regular process in the language, motivated by a general constraint against clusters of more than one consonant, then one would expect epenthesis to apply also in the case of such formations as /vardh-sya-ti/, yielding surface *varṭs-i-yati**, rather than the actually attested *varṭsyati* 'will turn'. (To claim that epenthesis is a global rule which applies only in those cases where an underlying vocalic segment has been eliminated by an earlier rule, thus leading to a violation of 'Sievers's Law', would seem to be merely begging the question) — Note that, as /vardh-sya-ti/ → *varṭsati* and many similar forms show, 'Sievers's Law' is a constraint on phonological (and morphophonemic) *derivations*, not on underlying (or surface) representations.

11. Note that a low-level rule converts the high back glide into a voiced bilabial or labiodental fricative. The difference between the earlier (derived) glide and the surface fricative will in this paper be disregarded, the symbol *v* being used to refer to both.
12. In the verbs, this rule may optionally also apply after single *initial* consonant, as in /vii-anti/ 'they lead' → /viyanti/ → *vyanti*; /huu-aya-ti/ 'calls' → /huvayati/ → *hvayati*.
13. In external sandhi, to be sure, Diphthong Contraction does take place also before *y*; cf, /daivāya#iyam/ → *devāyeyam* 'to the god she ..', /satrau#ayam/ → *śatroyam* 'O enemy, he...'. However, this is of no relevance to the present discussion which centers only on internal sandhi rules.—In *internal* sandhi, only two exceptions occur in Late Vedic, namely the *reduplicated* intensives *yo-yuv-at* (from *yu-* 'unite; separate') and *yo-yup-yate* (from *yup-* 'obstruct'). These are no doubt to be explained along the lines of Wilbur 1973, namely as owing their contracted *o* to the influence of the other reduplicated intensives from roots containing an underlying /u/, such *śo-śuc-a-* (from *śuc-* 'gleam') and *to-tud-ya-* (from *tud-* 'push'). — Note that the *e* in some other forms containing surface *-ey-*, most notably in gerundive (and other verbal) forms like *-deya-* 'to be given' (from *dā-*) can, in Late Vedic, not be considered to be of (underlying) diphthongal origin, since at this stage of the language there is no independent evidence for a gerundive suffix /-iya-/ (or for an /-i-/ which could be said to intervene between the root-final /-ā-/ and the initial /-y-/ of the suffix /-ya-/ whose /i/ → /y/ could merge with the preceding /ā/ into surface *e*. What we seem rather to be dealing with is a morpho-phonemic replacement of root-final /-ā-/ by /-e-/ before (certain) suffixes beginning with /y/.
14. Speakers for whom the surface superlative suffix *-iṣṭha-* is segmentable as *-iṣ-ṭha-* and thus relatable (by *ø*-grade formation and the well-known Ruki-Rule) to the surface comparative suffix *-yas-* would, of course, have to have an underlying comparative suffix /-ias-/ in order to account for the surface alternation between (comparative) *-y-* and superlative *-i-*. However, after application of Glide-Formation, these speakers will have the same intermediate forms (/prayiyas-/, /śrayiyas-/) as speakers who do not relate the suffixes and thus have underlying /-yas-/ in the comparative.
15. I hope to discuss this rule in a future paper dealing with the general problems involved with the phonological derivation of

set-root formations. In the meantime, compare the following derivations illustrating the independent justification of the special set-rule under discussion. /bhaui-tum/ (inf.) 'be (come)' → *bhavitum* vs. /bhaui-a-ti/ (sg. 3 pres. act. ind.) → *bhavati* (not *bhavyati** with retention of root-final *i* and Glide-Formation). Similarly, the third singular present middle corresponding to the infinitive *bhuyitum*/*bhetum* (from /bhāii-tum/) is /bhāii-a-tai/ → *bhayate* (not *bhāyate**).

16. Perhaps, however, one should expect *kṛṇviya*? (A corresponding *apnviya** would, however, be blocked by 'Sievers's Law'.) Either way, the regular application of rules would not produce the actually attested *kṛṇviya*, *āpnuviya*.
17. Recall that *i*-Elimination was earlier defined as an optional rule. (But compare section 5.3 below.)
18. A surface sequence *uy* does not appear to be otherwise attested before consonant (or word boundary). The fact that in the pronoun stem /amu-/ 'that', the underlying plural stem /amu-y/ surfaces as *amī* (-) before consonant and word boundary might perhaps be taken to indicate that /uy/ contracts to *ī* before consonants and word boundary. In that case, one would expect the surface forms *kṛṇīthās**, *āpṇīthās** which, of course, still do not agree with the actually attested forms.
19. For the purposes of the present discussion, set-roots can be defined as roots which in their underlying guṇa form are of the shape (consonant) + *a* + high vowel or liquid or nasal + *i*.

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LEARNER UNCOMMUNICATIVENESS AN APPROXIMATIVE SYSTEM

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The importance of contrastive studies in second language teaching, though realized a decade ago, is often seriously questioned. Experimental and informal observations reveal serious limitations in this approach because "the weight given to teaching various things is determined not by their importance to the user of the language, but by their degree of difference from what the analyst takes to be corresponding features of the native language."¹ In addition to contrastive approach recent linguistic theory has offered a new insight into language interference which the applied linguists have been claiming to be necessary for efficient and systematic language teaching courses. It is stated that there is no particular need to fight against the intrusion of the learner's native language which always act as source for interferences. So language learning is defined as a process of acquiring a set of new habits.

Systematic investigation of learner's speech behavior has been largely neglected while contrastive analysis of LS (Source Language) and LT (Target Language) have grown in abundance in recent years. The variations which occur largely in learner's speech are introduced by various factors which could form intermediate systems in the learner's verbal performance. Unless the language teacher makes a brief study of learner's speech behavior with reference to its own term in addition to LS and LT the language teaching may not attain perfection. It is, therefore imperative to draw the attention of language teachers to learner's speech behavior.

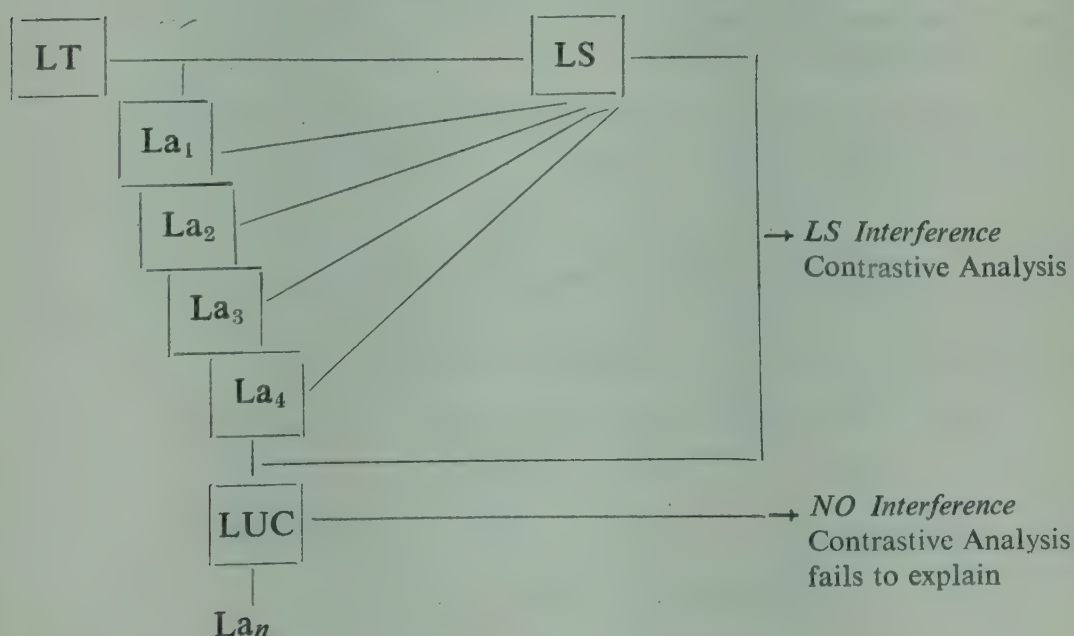
It is evident that a system is employed by the learner at every successive stages of learning a second language. That system, which

1. Leonard Newmark, 1970.

we would call here as "approximative system" is the deviant linguistic organization which varies in accordance with proficiency level. As William Nemser says, "an approximative system is the deviant linguistic system actually employed by the learner attempting to utilize the target language"². For instance 'learner pidgin' is an approximative system in which the learner utilizes the target language without having any fundamental grammatical knowledge of the language concerned.

As we said earlier an approximative system is an intermediate system. It is different from learner's source and target languages. It could be introduced on the basis of both linguistic and non-linguistic factors in all the levels of learner's verbal performance. This paper presents an approximative system, introduced on the basis of the factor 'learner uncommunicativeness'. Learner uncommunicativeness or non-availability of proper speech environment hampers subsequent language learning to the extent of introducing an approximative system. This intermediate system is evolved when the learner sets out to utilize the target language in a contact situation. Some of the evidences for the formation and existence of such a system are the usage of semi-grammatical sentences, incorrect nominal compositions and declaratives as interrogatives.

Let us see the successive stages of approximative systems of second language learning.



2. William Nemser, 1971.

La refers to the language approximative systems. $La_1, La_2, La_3 \dots La_n$ are the successive stages of approximative systems. But no approximative system is thoroughly studied since it is beyond the scope of the present paper. It is important here to note that at one stage of approximative system the learner is completely free from the interference of LS and that there is no need of contrastive analysis of LS and LT. We marked the above system as LUC and as we have seen already that it is evolved by the learner uncommunicativeness.

Our assumption in this intermediate system is that a learner is being taught in a situation where target language is not spoken. So the channel of communication is blocked, at least partially though not completely and it causes the evolution of an approximative system. In this system, interference of source language is absolutely absent and the learner is fully aware of fundamentals of grammar.

As mentioned earlier the use of incorrect nominal compositions, declaratives as interrogatives and semigrammatical sentences have more dominance in this intermediate system. The semigrammatical sentences have more dominance in a subsequent approximative system in which fluency is already attained because of free communication. The difference between these two systems lies in the types of sentences mentioned above. These differences manifest in a contact situation as the linguistic habit of native speakers whereas it is not so in the system which is evolved by the learner uncommunicativeness.

In this system, as we have seen already the learner is thorough with the fundamentals of grammar. It does not mean that his language is error-free and well-formed. But it is quite clear that interference has no role and it is assumed that the language habits acquired are clearly understood by the students. Eventhough, some of the structures are so peculiarly used for which no reasons could be attributed. Let us consider the following sentences:

(1) /niinka (L) colriinka (L) naan paa i amaaTTeen/

1	2	3	4
You	say	I	will not sing
1	2	3	4

(2) /avan colraan naan varamaaTTeen/

1	2	3	4
He	says	I	will not sing
1	2	3	4

The sentences (1) and (2) are repeatedly used by the learners whose mother-tongue is Hindi. They are not well-formed Tamil sentences though the meanings of them are conveyed perfectly. Now let us consider the following sentences.

- (3) /naan paaTamaaTTeen NNu niinka (L) colriinka (L)/
 1 2 3 4 5
 You say that I will not sing
 4 5 3 2 1

- (4) /naan varamaaTTeen NNu avan colraan/
 1 2 3 4 5
 He says that I will not come
 4 5 3 1 2

Let us compare these well-formed Tamil sentences with the potential equivalents in the learner's mother-tongue. The sentences would be possibly

- (5) /aap kahte hāi ki mē nahī gaauungaa/
 1 2 3 4 5 6
 You say that I will not sing
 1 2 3 4 5 6

- (6) /voh kahtaa hai ki mē nahī aaungaa/
 1 2 3 4 5 6
 He says that I will not come
 1 2 3 4 5 6

The order of the occurrence of the quoted sentence in Tamil is as follows:

Quoted S + Quotative—NNu + Matrix S

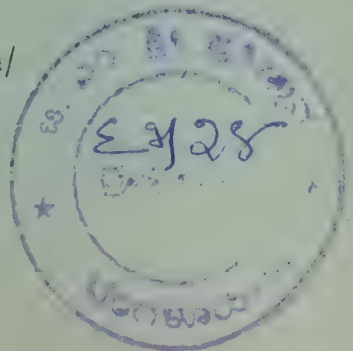
The order of the occurrence of the quoted sentence in Hindi is as follows:

Matrix S + Quotative—ki + Quoted S

Thus we find that the order of embedding quoted sentence in these languages differ. Now let us consider again the sentence (1)

- (1) niinka (L) colriinka (L) naan paaTamaaTTeen
 1 2 3 4
 You say I will not sing
 1 2 3 4

- (2) /avan colraan naan varamaaTTeen/
 1 2 3 4
 He says I will not sing
 1 2 3 4



Here we find that the order followed is Matrix S + Quoted S which is similar to the order found in Hindi. This transposition of the order and the loss of the quotative morpheme -NNu is due to the influence of the learner's mother-tongue.

Suppose this transposition as found in the learner's mother-tongue is allowed and suppose that the learner adds to the quotative morpheme -NNu, the resultant sentence in the learner's Tamil would be

*(7) /niinka (L) colriinka (L) NNu naan paaTamaaTTeen/

*(8) /avan colraanNNu naan varamaaTTeen/

which are ungrammatical in Tamil. But note the loss of quotative morpheme -NNu in this system. It cannot be explained away as interference from the learner's mother-tongue since his mother-tongue has an equivalent quotative morpheme -ki.

Another notable feature in this intermediate system is using the declaratives as interrogatives by the addition of intonation. See the following sentences.

(9) /niinka (L) variinka (L) ?/

1 2

You (are) coming?

1 2

(10) /avan pooraan ?/

1 2

He (is) going?

1 2

The equivalent sentences in the learner's mother-tongue are

(11) /aap aarahee hai ?/

1 2 3

You are coming?

1 3 2

(12) /voh jaarahaa hai ?/

1 2 3

He is going?

1 3 2

The sentences (9) and (10) are used as simple truth-value questions in the learner's approximative system. That is to say, the declarative sentences of LT are transformed into simple truth-value questions by adding intonation at the end of the sentence. The reason which can be easily attributed for this transformation is that it is due

to the influence of the learner's mother-tongue. It need not be the reason for this kind of transformation. For instance, the sentences

(13) You are coming tomorrow?

(14) You are Raman?

are in vogue in a kind of English language which Tamilians speak. Similar reason cannot be attributed for the existence of the sentences (13) and (14) because the expressions like

(15) niinka (L) naaLekku variinka (L) ?/

1 2 3

You (are) coming tomorrow?

1 3 2

(16) /niinkaL raaman ?/

1 2

You (are) Raman?

1 2

are not found in the free conversations of Tamil. It also further emphasizes that the non-availability of free communication in English causes to have this sort of expressions eventhough the learner had thorough knowledge of English grammar.

In Tamil and Hindi, the simple truth-value questions are formed by the interrogative morphemes /-aa/ and /kyaa/ respectively.

(17) /niinkaL variinkaLaa ?/

1 2

Are you coming?

1 2

(18) /avan pooraanaa ?/

1 2

Is he going?

1 2

(19) /kyaa aap aarahee hāi ?/

1 2 3 4

Are you coming?

1,4 2 3

(20) /kyaa voh jaarahaa hai ?/

1 2 3 4

Is he going?

1,4 2 3

Now let us consider the sentences (9) and (10) in the learner's approximative system and the sentences (11) and (12) in the learner's

mother-tongue. In addition to interrogative meaning the intonation in these sentences has many other meanings that are contextually conditioned. The following meanings can be roughly attributed to the intonation in which the learner uses in this intermediate system and in his mother-tongue.

Intonation
Interrogative
Exclamation
Definiteness

—
—
—

It is to be noted that the meanings and the usages are common to both LS and LT. However the intonation, in general, brings many other meanings in different contexts the learner uses this suprasegmental feature only to denote truth-value question in this approximative system. That is to say, instead of the sentences (17) and (18) the learner uses the sentences (9) and (10) even though similar sentences (11) and (12) are found in his mother-tongue. So in the learner's approximative system the intonation is confined to denote truth-value question only whereas the truth value question is denoted by the morphemes /-aa/ in Tamil and /kyaa/ in Hindi. See the sentences (17) - (20).

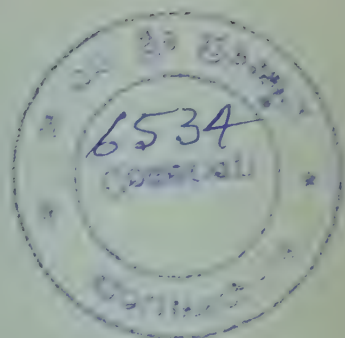
The above instances show that approximative systems are introduced in the learner's verbal behavior apart from the influence of the learner's mother-tongue. The systematic investigation of LS and LT is inadequate to explain these approximative systems and these must be observed and studied in their own terms.

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COLOPHON

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ELAMITE AND DRAVIDIAN: THE MORPHOLOGICAL EVIDENCE

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In a recent paper, which primarily uses lexical data, I was able to demonstrate that Elamite, a major language of ancient West Asia, is cognate with the Dravidian language family of South Asia. ¹This article is based on the Achaemenid Elamite (AE) glossary in R. T. Hallock's *Persepolis Fortification Tablets* and on the *Dravidian Etymological Dictionary* (DED) by Burrow and Emeneau. Starting with the AE glossary, all personal names and obvious loanwords were excluded. There remained about 270 lexical items that could be assumed to be Elamite. A large proportion of these were verb stems, and some had very vague meanings like 'a kind of tool' or 'a kind of fruit'. Out of this total known AE vocabulary, 25% were shown to have good cognates with Dravidian. The phonological correspondences based on these etyma are given in Table 1. These phonological statements hold for the root portion (generally at least two syllables) of the lexical pairs with only a handful of exceptions, many of which seem to be isolated special cases. Another 12% of the AE vocabulary have much more doubtful connections with Dravidian or are obviously internally derived in Elamite; such as, AE *nāmana* 'daytime' derived from AE *nan* 'day' which itself is cognate with Dravidian *naa* 'day'. Fifty percent of the AE words have no clear cognates with Dravidian, and the remaining 13% are so uncertain, in form or meaning, in Elamite as to be virtually unusable. There seem to be no loanwords in this corpus between AE and Proto-Dravidian (PDr) with the notable exception of AE *kutira* 'bearer' appearing in PDr as *kutiray* 'horse'.² Near perfect phonological correspondences in word roots, with a good semantic fit, for 25% of an arbitrary small sample vocabulary is sufficient proof in itself that these languages are cognate.

Elamite is attested in several different versions, the most important of which are Achaemenid Elamite (AE) and Middle

Elamite (ME).³ Achaemenid Elamite was used as the language of bureaucracy in the Achaemenid Persian Empire. There is a quite extensive corpus of which large portions are bilingual in Old Persian (OP) or Akkadian. This is by far the best known version, but it is heavily influenced by OP vocabulary and is often a calque on OP syntax. Middle Elamite, which is at least 600 years older, comes from the recods of the Elamite Kingdom at Susa. Most of the texts are monolingual, but some are "parallel" with Akkadian. Where similar to AE or where a construction is well attested, ME is fairly well understood, but otherwise, speculation becomes common. It does seem, however, that regional dialect differences in addition to time stand between the two different versions. Except where noted this paper is primarily concerned with Achaemenid Elamite.

The Dravidian language family is divided into three branches labeled North, Central, and South. After a substantial amount of careful work, it is fairly clear that the historical relationships of the Dravidian languages are well represented by their present location.⁴ The South Dravidian (SDr) languages form a compact and continuous block in southern India, to the north of them are the Central Dravidian (CDr) languages, while the North Dravidian (NDR) languages are scattered on the edges of the Indo-Gangetic plain.

In addition to the phonological and lexical evidence that Elamite and Dravidian are cognate, there is considerable morphological evidence that not only demonstrates in its own right that these languages are cognate, but also that they are closely cognate. Some obvious correspondences in noun derivation were noted in the nineteenth century by Caldwell.⁵ Most striking of those is the formative for abstract nouns; in Elamite this is -me; for example, *sunki* 'king' *sunkime* 'kingship' or 'kingdom'; in Dravidian *-may* forms abstract nouns as in Tamil, *tira-* 'thrive' becoming *tiramai* 'ability'; *arumay* 'rareness' *neermai*; *straight forwardness*.

The basic case endings and case-like constructions are compared in Table 2. In both languages the case endings blend with the postpositions, and it is often very difficult to separate them. Among the most archaic cases in Dravidian are the nominative, the dative, and the genitives.⁶ These have no internal source in Dravidian. On the other hand, the locatives are fairly straightforward postpositions and can usually be traced to an independent noun. In Elamite there are differences for the genitive depending on the dialect. Middle Elamite used postpositional concord to indicate a genitive relationship while Achaemenid Elamite had a separate case ending for this. For both dialects of Elamite, the

accusative is common only with the personal pronouns, and the dative is indicated syntactically. In comparing Elamite and Dravidian, the accusatives are obviously similar, and the genitives are similar between Proto-Dravidian and Achaemenid Elamite. The Dravidian dative seems to be related to the Elamite postposition *ikkt* which indicated location near a person, and by extension, motion towards. In addition to functioning as an indirect object, the Dravidian dative has both of these meanings; also, in Old Tamil the dative ending commonly had a locative meaning. Possibly the Elamite postposition *ukku* 'over' is also involved. Postpositions for 'over' regularly take the dative case in Dravidian languages as opposed to most other postpositions which take the genitive.

The second-person pronouns given in Table 3 are striking in their similarities. What is important is not so much the almost identical base form of *n* plus a high vowel as the parallels in morphological changes with case and number. Plurals in *-m* are very rare in both Dravidian and Elamite, and this correspondence is significant. There are no clear-cut correspondences in the first-person pronouns. There has obviously been a great deal of restructuring of the third person pronouns in both language. In fact, this is still going on in some Dravidian languages. As a result, only a few correspondences remain. The Dravidian neuter plural demonstrative pronouns with *-v* like Tamil *avai* 'those things' are clearly cognate with the common Elamite plural marker *p*; AE *sunki* 'king', *sunkip* 'kings'. The personal endings of the verb support this connections.

However, the best and clearest correspondences are found in the verbal morphologies of Elamite and Dravidian. The similarities are striking in both their extent and their details and indicate that these two families are closely related. Both Elamite and Dravidian have a general verbal structure of: verb stem + tense marker + personal ending. Both have only two basic positive tenses which can be labeled *past* and *nonpast* although this is a gross simplification of the actual semantics. Of these two tenses, the nonpasts have the clearer correspondences. A selection of Dravidian nonpasts, a tentative Proto-Dravidian reconstruction, and the Elamite nonpasts are given in Table 4.

As with all aspects of the Elamite verb, the morphology of the nonpast is relatively straightforward. It consists of the verb stem plus *-n* followed by one of the two sets of personal endings.⁷ There is little difference in the morphology between AE and ME. Transitivity contrasts are not made in this tense.

Only recently has serious attention been turned to the morphological problems in historical Dravidian. So, in spite of the age of comparative Dravidian as a field, comparative Dravidian morphology is still in its initial stages. The recent work by P. S. Subrahmanyam gives six different morphological markers for the nonpast in Proto-Dravidian.⁸ These include: *-pp-* ∞ *-v-* (∞ means morphologically alternates with) which is largely restricted to SDr; *-kk-* ∞ *-k-*, *-tt-* ∞ *-t-*, and *-um* which have occurrences throughout Dravidian; *-n-* which is normal for some CDr languages; and *-o-* which is restricted to NDr. There is little explanation of this distribution.

In Old Tamil there is a group of nonpast forms which do not have the normal personal endings and which have traditionally been discussed as a miscellaneous collection of archaic and defective futures.⁹ Except for the first-person plural which had two forms, all these futures were "defective" in different persons and numbers. Only under the stimulus of Achaemenid Elamite was it obvious that these forms along with a few others (such as *-um*) formed one conjugation. In retrospect, it seems obvious since these endings match forms present in CDr and NDr. Four of the more conservative CDr languages and Kurux for NDr are given in Table 4; particularly note the forms of very conservative Konda.¹⁰ These forms were probably archaic or poetic in Old Tamil and certainly coexisted with forms that were or came to be the future tense. The future forms given for Literary Tamil are examples of the future forms found elsewhere in South Dravidian. By the time of the earliest commentators, all clear knowledge of these old nonpast forms had been lost.

When these archaic Tamil forms are compared with those from CDr. and NDr, a new set of endings appears for the Proto-Dravidian nonpast. When compared with the Elamite nonpast, there is a one for one match in the surviving endings. The correspondences are so close (even with the Old Tamil forms) that comment is largely superfluous. Elamite and Dravidian are not only cognate, but most be closely cognate for such a set of correspondences to occur.

With this reorganisation, the number of PDr constructions involved with the nonpast drops from six to two. Of these two, the one in *-pp-* is probably a subsidiary verbal of intent which was later generalised in SDr. It retains much of its original use in some CDr languages. ¹¹From the single basic nonpast system in PDr, most of the other nonpast forms in modern Dravidian languages are readily derived by a combination of cluster simplification and morpheme reanalysis. For some, the change is primarily phonological such as

Old Tamil losing *-m-* before following stops, and the NDr reduction of **-um-* to *-o-* for the future. ¹²Some such as Konda have retained the old system almost intact with changes only in some of the personal endings. ¹³For most CDr forms (and the NDr present) there was a complex change with the adding of new personal endings based on the pronouns which allowed the initial consonant of the old personal ending to be interpreted as part of the tense marker; note Kui in Table 4. This was often followed by a tendency to generalise (partially or wholly) one of these consonants as the tense marker note *-k-* for Gondi and *-t-* for Naiki. This reanalysis was accompanied in many cases by pure phonological loss. The outline is clear even if many of the details remain to be worked out.

The other basic tense, labeled the *past*, is not nearly so direct. However, it shows deep lying correspondences of a significant nature. Typical of the past tense for both languages is a set of intransitive/transitive contrasts indicated by a change in conjugation class. ¹⁴Furthermore, these conjugation classes need not extend to the nonpasts.

Following the analysis in Hallock 1959, AE clearly shows a contrast between transitive (and unmarked) pasts as opposed to intransitive pasts. These are respectively his conjugations one and two. This contrast is not maintained in the nonpast. The Elamite past forms are given in Table 5. Note that the AE forms have decayed considerably and that the ME forms are more basic. The marker *-ut* seems to have been an additional marker of the first-person added to the regular ending; it is probably present in the conjugation two ending *-ket*. ¹⁵Note that the conjugation contrast is clearest in the their-person forms.

Unfortunately, there is no clear overview of the Dravidian past tense formation. The Tamil-Kodagu group in SDr shows an elaborate and consistent alternation with *-t-* for a small group of (C) VC- stems, *-i(n)-* for the remaining obstruant final stems, and *-nt-* ∞ *-tt-* for the sonorant final stems. ¹⁶Kannada and CDr tend to the sole use of *-(i) t/d-* as the past tense marker. Kurux and Malto (NDr) use a double marker with *-c-* (or *-j-*) ∞ \emptyset in the first slot and *-k-* ∞ *-v-* ∞ \emptyset in the second. Significantly, Kurux and Malto show a variation of verb stem for a few verbs without the *-c-* which strongly resemble SDr and CDr past tense markers; Kurux, *on-* 'drink', *onḍ-k-an* 'I drank'; Lit. Tamil, *uṇ-* 'eat, drink', *uṇ-t-en* 'I ate'; Naiki. *un-* 'drink', *un-d-an* 'I drank'. Also *-c-* is found in some CDr and SDr verbal forms particularly the past verbal participle. ¹⁷Thus the first slot marker (i. e. *-c-* and the stem variations)

seem to be parallel with the past tense markers found else where in Dravidian. The second slot markers (i. e. *-k-*, *-y-*, \emptyset), of which *-k-* is also used by a small group of verbs in Brahui (see Table 5), is not found outside NDr and seems to be different. This is significant because the only correspondences in the past tense markers between Elamite and Dravidian involve these second slot markers.

Of the NDr languages Kurux (also Kuḍux, Kurukh, and Oraon) has the best description. According to Hahn, Kurux has four verb classes which are present only in the past.¹⁸ His classes three and four use the slot one markers *-c-* and *-j-* along with the slot two markers, *-k-* ∞ \emptyset , to indicate the past. Of more interest are his classes one and two which have only the slot two markers. Class one uses *-k-* for the first and second persons and nothing (\emptyset) for the third-person while class two uses *-k-* in the first two persons and *-y-* in the third-person. See Table 5.

Dravidian languages commonly have a strong contrast between different degrees of causation in the forms of the verb.¹⁹ In SDr and CDr this is realised only by increasing the degree of causation; i. e. an inherently intransitive verb can become only transitive while an inherently transitive verb can become "causative" by the same process. Unlike the rest of Dravidian, Kurux and Malto have a process of forming intransitives in addition to the more usual causative formation process; i. e. in Kurux, from a basic transitive stem (*es?* 'break') both an intransitive (*esr?* 'be broken') and a causative (*estā?a* 'have someone break') may be derived. In Kurux, the marked intransitives in *-r?* always go in verb class one²⁰

If these NDr forms are compared with the Elamite past forms, several possible parallels develop. One, the Elamite transitive forms (conj. I) have the third-person marker *-š* and a class marker (at least for the plural) of *-h-*. Using the correspondences in rules ten and twenty in Table 1, these Elamite forms fit with the Kurux transitives in class two which have *-y-* in the third-person forms and *-k-* elsewhere. Unfortunately, the reflexes of PED **-k-* are among the most unpredictable. In both Elamite and Dravidian it is likely to disappear or weaken. Similarly, the Elamite intransitive forms (Conj. II) which have *-k-* as the class marker and no special third-person forms seem to correspond to Kurux's class one which is used with intransitive stems. It is still not certain exactly what this Elamite *-k-* corresponds to in Dravidian.²¹ The Brahui forms give evidence of the use of *-g-* ($< *k$) as a tense marker in all persons.

The straightforward morphological evidence for the correspondences is admittedly weak in the past.²² However, much more

significant are the parallel shifts in verb class corresponding to parallel shift in transitivity. This type of detail would not be expected if these forms were not cognate. In any case, a great deal more attention is going to have to be paid to NDr verb morphology in historical Dravidian.

It should be mentioned that some analyses of Elamite consider the intransitive forms and the nonpast forms to be constructed on verbal nouns.²³ If this is so, it would not be inconsistent with the evidence in Dravidian. In both Dravidian and Elamite the morphological contrast between noun and verb is weak. In both languages nouns may take the same personal endings as the verb and act as predicates. Some Dravidian verbal forms such as the third-person neuter singular in *-atə* are clearly nominal in origin.

In addition to the normal verbs, AE has a set of forms with the particle *-ma-* inserted between the stem and the personal endings. Its purpose is clear only in the nonpast where the forms with this *-ma-* have a durative aspect (commonly OP present time) while forms without it have a punctual aspect (commonly OP future time). Dravidian has a verb **man-* 'be, stay, endure' (DED 3914) which significantly functions as an auxiliary in CDr where for *koya*, *kui* and *kuvi* it forms the auxiliary for the present as opposed to the nonpast without the auxiliary which functions as the future. Thus, AE and some CDr languages would seem to share their auxiliary system. However, it is not certain if this is cognate or the result of independent innovation. The meaning of the verb would readily lend itself to such a contrast in aspect.

Other nonfinite verbals seem to correspond, but it is sometimes difficult to trace a single form through all the languages involved. Two forms, however, demand special comment. The first are the so-called "final" forms of AE with *-ta* added to the finite forms which are certainly related to the neuter participial nouns in Dravidian formed by adding *-tə* to participles; in Literary Tamil, *cey-t-ēen* 'I did', *cey-t-a* 'done', *cey-t-a-tu* 'that which did'. The Dravidian neuter personal ending in *-atə* comes from this source, of, Tamil, *cey-t-atu*. 'it did'. The second is the nonpast relative participle which in PDr had *tho*-form **um/un* (cf. Tamil *ceyy-um*) and the Elamite forms in *-n* used as nonpast participles. This form is equivalent to the nonpast finite without the personal endings and is identical with the neuter singular finite nonpast in both PDr and Elamite.

The close correspondences in the nonpast forms together with the phonological and lexical correspondences demonstrated in the

earlier paper prove beyond any reasonable doubt that Elamite and Dravidian are closely cognate. It is also possible to tentatively place Elamite in its relationship to the Dravidian family. There can be no more than one node labeled Proto-Elamo-Dravidian between all of Dravidian on one hand and all of Elamite on the other.²⁴

This work on comparative Dravidian is obviously on-going and tentative in its details although the general outline is clear. I hope that these insights will stimulate further work in this field. It is also hoped that this work can provide insights into Elamite and the prehistory of South and Southwest Asia in general. This brief note has attempted to go into only one main point and closely related details; not all possible arguments and details have been included. The author invites comments and suggestions on this work from anyone interested in the area.

FOOTNOTES

1. "Towards Proto-Elamo-Dravidian", *Language* 50. (Expected March, 1974).
2. "If cognate the Dravidian form **kutiyan* would be expected. The *-ray* ending is not explainable internally in Dravidian. However, the verbs stems, AE and PDr *kuti-* are cognate.
3. For an excellent summary of Elamite studies, see Reiner 1969.
4. See Krishnamurti 1969 for a general background and bibliography. Also see Emeneau 1967 and Zvelebil 1972 for more detail on SDr.
5. See Caldwell 1856. These and other similarities have been noted by several scholars including Bork 1925 and Diakonoff 1967. Diakonoff only lacked sufficient lexical data to make a convincing case of his own that Elamite and Dravidian are cognate.
6. After Zvelebil 1972.
7. In this presentation I follow Hallock 1959 in which he calls the nonpast Conjugation III. Hallock's description of the AE verb is not linguistically sophisticated and his terminology is confusing. Nevertheless, he probably has the greatest familiarity with the AE texts and his description of the actual usages is excellent. For alternative analyses of the Elamite verb, see Labat 1951, Reiner 1967, and Paper 1955.

8. See P. S. Subrahmanyam 1971, *Dravidian Verb Morphology* (DVM), pp. 189-227. This book is a source book with the morphologies stated in as consistent a format as possible.
9. See DVM pp. 243-5 for a description of these forms. L. V. Ramaswami Aiyer 1938 has an excellent discussion of these forms on pp. 763-5, 767-9.
10. Konda is one of the most conservative languages in all of Dravidian in both its phonology and its morphology.
11. These include the simultative suffix of Konda in *-pu/-bu* and the permissive in Kuvi with *-p/-(m)b-*. See DVM pp. 274, 283, 305-6.
12. This loss is possibly an indirect result of the simplification of NCC cluster groups to CC in SDr. While directly occurring only in strong (i. e. with CC clusters) verbs, it could readily have influenced the entire paradigm. See Kumaraswami Raja 1969.
13. There seem to have been at least two sets of personal endings in PDr. The ones given in Table 2 are largely verbal while the other set is closely patterned after the personal pronouns and is largely nominal. This second group has tended to replace the former throughout Dravidian and can certainly be reconstructed for PDr.
14. In Dravidian, it is not clear whether the causative (i. e. transitive) markers led to the verb classes or vice versa. In Kannada and CDr languages without a contrast in verb class causative endings are used instead although often with remnants of older causative markers.
15. Compare the *-ut* ending in Brahui (Table 5.). Also note the ipex ending in **aṭ* in PDr.
16. See Emeneau 1967 for a detailed description. This very strong SDr pattern has tended to be overly influential in historical Dravidian. There are some indications that this pattern was in part created in SDr and does not necessarily reflect the situation in PDr. See DVM pp. 68-74.
17. See DVM pp. 221-224.
18. Hahn's grammar in spite of its age and old-fashioned format has been most useful in this work. Although basically a better approach, Shankara Bhat 1970 does not provide the same evidence on the *-y-* past markers either due to a difference in format and style of approach or to a difference in dialect. This short work does not provide enough examples to check this

point. A shortcoming of Shankara Bhat's article is the use of a single informant (male) for a language with marked differences in the verbal morphologies in male and female speech without any caveat to the reader that this is the case.

19. Causation is used here as a term for the general process which subsumes intransitive to transitive shifts. The derived transitive is only the first causative of an intransitive stem, i. e. 'to cause to be folded' equals 'to fold'. Some Dravidian languages such as Malayalam can have up to four degrees of causation expressed morphologically.
20. Closely related Malto normally has *-Gr-* with a variant *-r-* to mark the intransitive. It is still uncertain what is the relationship, if any, between this NDr intransitive *-r-* and the *-r-* used in CDr and SDr to add first or second person reference to the verb See Emeneau 1945.
21. It is not clear exactly what this Elamite *-k-* corresponds to in Dravidian. Possibilities include the *-k-* tense marker in Kurux (or its geminate variation), the *-k-* intransitive marker as in Malto's *-Gr-*, or to a combination of both. Unfortunately, **-k-* varies in its reflexes in both Elamite and Dravidian and tends to disappear in many environments.
22. The correspondences for the pasts are not put forward as primary evidence that Elamite and Dravidian are cognate. There is more than enough evidence for that elsewhere. Rather, this part of the work tries to point out what correspondences seem to exist.
23. See Labat 1951 and Reiner 1969. For my purposes either approach is defensible and adequate. I have used Hallock's approach because he provides the most details of actual usages as opposed to theories of what the forms should mean.
24. If Proto-Elamo-Dravidian should prove to be an independent family rather than a subpart of a larger grouping, I would suggest the term *Zagrosian*, after the Zagros Mountains of southern Iran, as a term for the family.

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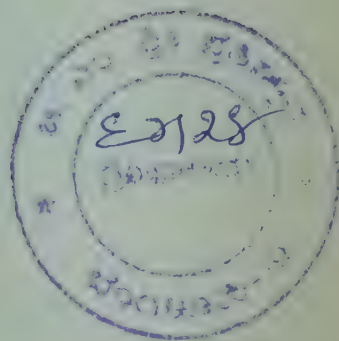
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Table 1. —Reconstructed Proto-Elamo-Dravidian (PED) phonemes with their Achaemenid Elamite and Proto-Dravidian Correspondences.^a

*PED Elamite: Dravidian/PED environment^b

1. *X > ø : X / #—{t, n} a X = {i, e, u}
2. *w { $\begin{smallmatrix} i \\ e \end{smallmatrix} \} > \text{ø} : \text{v} \{ \begin{smallmatrix} i \\ e \end{smallmatrix} \} / \#—IV$
3. *a > a : a
4. *i > i : i
5. *u > u : u
6. *o > u : o
7. *e > e, i : e
8. *w > ú : v
9. *y > y : y
10. *k > $\begin{cases} k : k / \#—V, V—\# \\ h, \text{ø} : k, \text{ø} / V—V \end{cases}$
11. *kk > kk : kk
12. *šk > šk : kk
13. *ñk > k : ñk
14. *ñkk > kk : *ñkk
15. *t > $\begin{cases} t : \text{ø} / \#—VrC \\ t : t / \#—V \\ t : t, t \end{cases}$
16. *tt > t (t) : tt

17. *rt > rt : t
18. *p > $\begin{cases} p : p / \# \text{---} V \\ p : v / V \text{---} V \end{cases}$
19. *mp > p (p) : mp
20. *š > $\begin{cases} \check{s} : t / \# \text{---} V \{r, l\} V \\ \check{s} : y / V \text{---} V, V \text{---} \# \\ \check{s} : \emptyset \end{cases}$
21. *c > $\begin{cases} c : c / \# \text{---} \{i, e\} [c = AE \underline{z}] \\ s : c / \# \text{---} \{a, u\} \end{cases}$
22. *ñc > ns : ñc
23. *cc > cc : cc
24. *r' > r : r / # (C) V---V, # V---C
25. *r' > rr : r / # CV---V
26. *n > $\begin{cases} n : n / \# \text{---} V \\ n : \underline{n}, \underline{r} (?) \end{cases}$
27. *nn > nn : n (n)
28. *rn > rn : n
29. *l > $\begin{cases} l : l, \underline{l} / V \text{---} V \\ n : \underline{l} / V \text{---} \# \end{cases}$
30. *ll > ll : l (l)
31. *ī > ī : l (?) [ī = AE *el*]
32. *m > m : m
33. *mm > mmd : mm
34. *v > md : v / #---V
35. *n + r > nr : n + r
36. *n + k > nk : n + k



Notes to Table 1.

- a. The AE transcription is according to Hallock 1969 (except as noted), the Dravidian is given according to the scheme to the *Dravidian Etymological Dictionary*.
- b. Read *X > Y; Z / W---T as the PED etymon X has reflex Y in Elamite and Z in Dravidian when it occurs in the PED environment after W and before T. The symbol # indicates space. i. e. # --- means initially and ---# means finally; V represents any vowel and C is any consonant.

- c. The phoneme *y* does not occur in the corpus. It is included because Elamite has *y* only as #*ya*. In PDr the relatively rare initial *y* occurs before *a* or *ā*. The patterning is close enough to provisionally include this in the PED list.
- d. AE *m* is ambiguous between (m) and (v).

Table 2. —Correspondences in Case Endings and Case-like Constructions.

	*Proto-Dravidian	Elamite
Nom.	ϕ	ϕ
Acc.*	+(V)n	+n
Gen.: Adnominal possessive	+in +a	+na in AE, (syn) in ME
Dat.	+(k)ku	(syn)
Locatives	—ul —il/-in	—ma 'in' —ikki 'at (a person) to (ward)'
	etc.	—ukku 'over' etc.

+ case ending

— case—like postposition

(syn) handled syntactically

*The accusative has restricted usages in both languages.

Table 3. — Second-person Pronouns

Proto-Dravidian				Elamite	
<i>Stem</i>	<i>Sg.</i>	<i>PL</i>	<i>Case</i>	<i>Sg.</i>	<i>PL</i>
Nom.	ni	nim	Nom.	nu	numi
Oblique	nin/(num)	num/nim	Acc.	nun	numun
			Poss.	-ni	'thy'

Table 4-Selected Nonpast Paradigms (-tense marker-personal endings)

Group Lang	South Dravidian		Central Dravidian		North Dravidian		Proto-Dravidian		Elamite	
	Old Tamil	Literary Tamil	Konda	Kui	Gondi	Naiki	Kurux	Kurux	ME	AE
Tense	nonpast	future	nonpast	future	future	present- future	future	(Female) ^e present	nonpast	non- past
1s ^a	-ku	-pp-e:n	-n-a	-ø-i	-k-a:	-t-an	-o-n	-en	-N-kef	-n-k
1 pex	-kumb ^b	-pp-o:m	-n-ap	-n-a mu	-k-o:m	-t-am	-o-m	-em	-N-kum	-n-ka
1 pin	-tumb ^b		-n-aṭ	-n-asu	-k-a:ṭ		-o-t	-d-at	-N-(k/t)at	-n-un
2s	-ti	-pp-a:y	-n-i(d)	-d-i	-k-i:	-t-i	-o-y	-d-i	-N-ti	-n-ti
2p	-tir	-pp-i:r	-n-ider	-d-eru	-k-i:ṭ	-t-ir	-o-r	-d-ay	-N-tir	(-n-ti?)
3sm	-m-aṇ	-pp-a:ṇ	-n-an	-n-an	-a:n u:r	-t-en	-o-s	—	-N-aṇr	-n-ra
3sn	-um	(kk)um	-n-ad	-n-e	-a:r	-tu ^c	-o	-i	-N(-ata)	-n
3pmf	-m-ar	-pp-a:r	-n-ar	-n-eru	-a:n-i:r	-t-er	-o-r	-n-ay	-N-ar	
3pn	-pa	-pp-ana	-n-e	-n-u	-a:n-u:ṇ	-ted ^d	-o	-i	-N-pa/av	-n-p m-pa

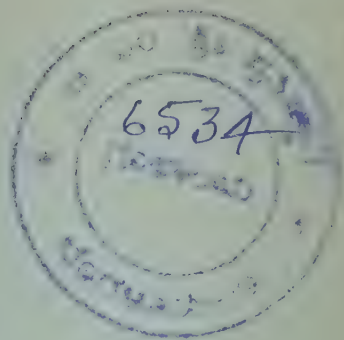
Notes to Table 4

- Abbreviations: 1. first person; 2. second person; 3. third person; *s.* singular; *p.* plural; *ex.* exclusive; *in.* inclusive; *m.* masculine; *f.* feminine; *n.* neuter/nonmasculine.
- Old Tamil is ambiguous as to which is inclusive and which exclusive.
- Also -len d) Also -le
- Kurux has separate forms for male and female speech.
- N = (u) m/n
- After Reiner 1969, her transcription does not indicate final vowels.
- After Hallock 1959, labeled Conjugation III.

Table 5 --Elamite and North Dravidian Past

Lang Voice Class	AE trans I	ME trans I	AE intrans II	ME intrans II	Kurux (male)			Brahui
					intrans* Hahn-1	trans Hahn-2	Hahn-3, 4	
1 s	-ø	-h	-ket	-k-ka	-k-an	-k-an	-ck-an	-g-ut
1 pex	-h-ut }	-hu }	-p-wut ?	?	-k-am	-k-am	-ck-am	-g-un
1 pin					-k-at	-k-at	-ck-at	
2 s	-ta ?	-ti ?	-k-ta	k-ti	-k-ay	-k-ay	-ck-ay	-g-us
2 p	?	-ht ?	?	?	-k-ar	-k-ar	-ck-ar	-g-ure
3 s(m)	-š	-š	-k	k (-ra)	-ø-as	-y-as	-c-as	-g
3 p	-š	-hš	-p	k-pi	-ø-ar	-y-ar	-c-ar	-g-ur

* This verb class is always used after the intransitive stem marker -r ? closely related Malto has -Gr- ∞ -r- for this.



COMMENTS ON SATYANARAYANA'S "A PROPOSAL CONCERNING THE REVISION OF THE PHRASE-STRUCTURE COMPONENT"

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I read with interest Satynanarayana's paper "A proposal concerning the revision of the phrase-structure component" in the IJDL Vol. II No. 2. The paper is divided into 4 sections. Section I "shows that current sysyntactic and phonological descriptions of English are incompatible with each other. Section II shows that Telugu presents a case in which a structure is needed where a V directly dominates N". Section III proposes two P. S. rules $V \rightarrow N$ and $N \rightarrow V$ and suggests "that the linguistic theory should expand the scope of P. S. component of grammars if it has to capture significant generalisations without jeopardising the compatibility of various components within a grammar." Section IV is a summary of Section I to III. It contains also an open question. First of all I have to point out certain inconsistencies found in this paper (1) Though the author states that "the present analysis does not bear on the existence or non-existence of such a level (called deep structure) it will not be discussed, he does discuss in the succeeding pages positing deep structures. 2) Whilst in Section IV (p. 346) he states that "the transformationalists cannot account for them either" he actually tries to give a solution for that. It would have been better if he had used the phrase "had not taken into account" rather than "cannot".

Section I

I agree with Satyanarayana that the present format of T. G. Grammar, more precisely its components, are incompatible with each other. Chomsky himself does not claim that his is a perfect one. It is one thing to say that the theory is alright but the realisation of the theory into a grammar is wrong and it is another

thing to say that both are wrong. It is not made clear in this paper whether Satyanarayana criticises the theory or grammar or both. In one place he argues that the theory has to be expanded (p. 327) and in another place he suggests a revision in the format of the grammar. In fact only an extension is suggested in the PS component. Really he attempts to make a compatibility between categories rather than between components. This is a problem connected with the format of the Lexicon. At the present state the format of the lexicon is still in the melting pot. Frequent alterations are being made. So we cannot criticise the theoretician, Chomsky, for, he is not writing a grammar for English. Rather he is trying to explain his theory with examples from English. Besides Chomsky himself admits in several places (see his "Aspects") that his is not a perfect one. More detailed analysis of various languages are necessary before anything could be said definitely. Under these circumstances Satyanarayana's attempts could be taken only as rigorous application of the theory to natural languages. It does point out certain problems regarding categories and their relations and how to treat them under the present format of TG Grammar. Deep structure still forms the sheet anchor in the format of T. G. Grammar. But Satyanarayana seems to evade this problem while in actuality he does discuss them. I have suggested a solution to the problem of handling the categories and their relationships below.

Coming to Section II Satyanarayana has given a list of words whose internal structure has to be analysed as N + Suffix but their surface realisations are like verbs. Hence the rule
$$\begin{array}{c} V \\ \wedge \\ N -inc \end{array}$$
. Here the

author has given both causative verbs and other types of verbs without any differentiation. I feel that separate treatment should be given for them. As the author has pointed out all these are borrowings from Sanskrit. As such there arises a question as to whether these are borrowed as nouns or verbs. This is a problem for the students of historical linguistics. Satyanarayana argues that these cannot be treated as stems because there is no motivation for such a category in the present theory of syntax proposed by Chomsky. I also agree with this. But this is again a problem concerned with "lexicon". Satyanarayana argues in his paper that these should be treated only as nouns because they appear as such in the compound nouns i.e. structurally in the noun position. I am going to argue below that as far as Tamil is concerned (probably in Dravidian languages) that all finite verbs could be derived from NOUNS by positing proper abstract symbols in the deep structure from which

the surface structures will be realised with the help of morphophonemic rules. Accordingly all these are treated basically as nouns. Even though both Satyanarayana and myself will treat them as nouns but our approaches are entirely different.

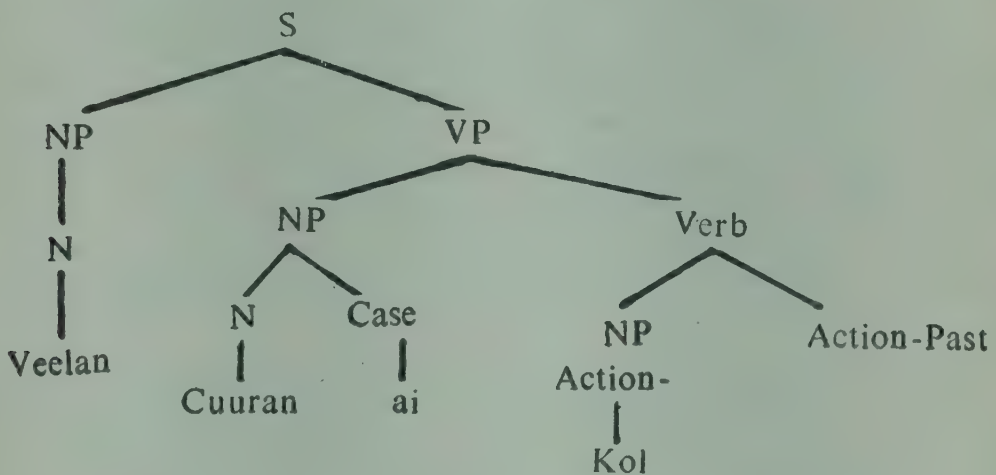
I give below an example from Tamil to demonstrate how one can derive verbs out of nouns in an uniform manner.

Consider the following : —

- 1) (a) veelan cuuranai-k-konraan.. “Veelan killed Cuuran”
- (b) veelan cuuranai-k-kolai ceytaan.. “Veelan killed Cuuran”

At present two different underlying structures are posited and they are derived accordingly. It has to be pointed out here that both these are semantically identical. When these two are semantically identical why two different underlying structures should be posited ? The reason may be this. In (1) (b) the relationship between kolai ‘killing’ and ceytaan ‘did’ is that of between object + verb whereas in (1) (a) no such relation could be posited. I suggest here a single deep structure from which we can derive both (1) (a) and (1) (b).

(2)

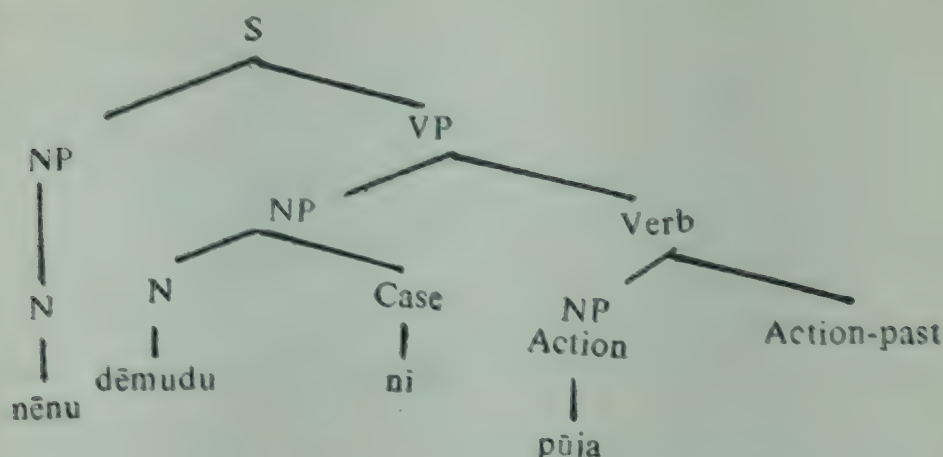


The verb is derived with the following morphophonemic rules :

- (3) 1. $kol + Action > kol + \left\{ \begin{array}{l} \underline{nr} \\ cey \end{array} \right\}$
2. $kol + \underline{nr} > ko + \underline{nr}$
 $kol + cey > kolai + cey$
3. $\left\{ \begin{array}{l} ko + \underline{nr} \\ kolai + cey \end{array} \right\} + Past > \left\{ \begin{array}{l} ko + \underline{nr} \\ kolai + cer \end{array} \right\} + \left\{ \begin{array}{l} \emptyset \\ -t- \end{array} \right\}$

In the same manner both (4) *nēnu demunni puja cesenu* and (5) *nēnu demunni pūjiñcēnu* could be derived because they are semantically identical.

(6)



The relevant morphophonemic rules are :

- (7) 1. $pūja + \text{Action} > pūja + \begin{Bmatrix} iñc \\ cēs \end{Bmatrix}$
2. $pūja + iñc > pūj + iñc$
 $pūja + cēs > pūja + cēs$
3. $\begin{Bmatrix} pūj + iñc \\ pūja + cēs \end{Bmatrix} + \text{Past} > \begin{Bmatrix} pūj + iñc \\ pūja + cēs \end{Bmatrix} + /ē/$

The relevant transformational rule of concordance will produce sentences (4) and (5). Similarly pairs like anuvadiñc- and anuvādam cēs-etc., also would be derived like this. Here Satyanarayana points out only the relationship between anuvādam and anuvādam cēs- and he has failed to recognise the relationship between anuvadiñc- and anuvādam cēs-. Verbs like puṣpiñc- (in Telugu), malarntatu 'bloomed' (in Tamil) could be derived by positing an abstract symbol viz., Process.*

I feel that one need not set up category changing PS rules as suggested by Satyanarayana. Such rules do not reflect the real grammatical relationships involved between constituents and they also fail to reflect the semantic relationship found between them. Moreover if one could derive N from V and vice versa it raises a question as to why then should one have two categories like N and V. As far as English is concerned it may be necessary that "neutral" lexical entries have to be set up as suggested by Chomsky. As a non-native speaker of English I cannot say anything regarding this. I offer no comments regarding the unpublished and published articles etc., quoted by Satyanarayana which I have not read.

*See R. Kothandaraman's recent article "A Note on Semantically identical Sentences in Tamil in Aayvu-k-kōvai, V Conference-Seminar Papers of All Indian University Tamil Teacher's Conference, Madras, 1973.

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There is no doubt that this paper exposes some genuine defects or gaps in current transformational theory. The proposal to add two PS-rules—

1) $V \rightarrow N$ 2) $N \rightarrow V$

entails an obligation to do more than say "The rule that inserts complex symbols ..will have to be context sensitive" (344). Obviously this, as it stands, constitutes an infinite loop (unless strict ordering is adopted, which will lead to underlying structures with all N and no V or all V and no N, in the manner of Bach, whose proposal is not discussed.) But even if this matter is cleared up by putting appropriate constraints on the two S's, there still remains the difference in intuitive feel and performance behavior of rules like these from more traditional PS rules. Such rules from the beginning (e.g. the *Syntactic Structures* rule Sentence \rightarrow NP+VP) clearly reflect the infinite creativity of language; they are free, in the sense that no one can answer the question about a particular NP+VP whether it has ever occurred before. But rules such as these category-changing ones, $N \rightarrow V$ and $V \rightarrow N$, are not free. One *can* ask about any correct V or N which results whether it has ever occurred before, and furthermore, native speakers will generally be able to answer the same problem that was raised by R. B. Lees' *Grammar of English Nominalizations*, which also incorporated etymologically explanatory rules into the ordinary grammar (but in the T-rules rather than the PS-rules) Possibly Satyanarayana's rules should also be T-rules with delayed lexicalization.

From the point of view of performance, when a speaker says "criticism" or "plaster" (as a verb), he is doing nothing creative; he is using resources of the language that are all ready for him to use. But the man who says "that criticism" or "plaster one wall" is being creative, even though those particular phrases may have occurred thousands of times before. Grammarians must recognize the distinction between creating a novel phrase (or sentence), using an old complex word, and creating a new complex word (where I am counting any output of $N \rightarrow V$ or $V \rightarrow N$ as complex, even if no affixes are added or phonological changes made). The syntactical PS component is one thing; lexical rules of derivation, compounding or class-shift are another, and belong in a different place.

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Dr. Pulavarthi Satyanarayana's recent paper "A proposal concerning the revision of the phrase-structure component" in Vol. II, No. 2, of this journal contains some very interesting facts about morphologically related forms in Telugu and English, and a proposal for how to handle such data in a generative grammar.

I would like first to discuss S's treatment and then to propose an alternative approach to the problems which he presents.

S begins by pointing out some discrepancies in Chomsky's discussions of morphologically complex words in English. Thus, in *Aspects*, *sincerity* is presented on p. 107 as if it were a monomorphemic word like *boy*; on p. 186, this claim is rejected in favor of a transformational derivation of *sincerity* from a sentence containing the adjective *sincere*. Then in a footnote (p. 219), it is suggested that, instead of a transformational derivation for a morphologically complex form, it might appear in the lexicon either specified positively for several lexical categories or specified not at all for these categories. In such a framework, *sincerity* might be the surface form of an item which was represented in the lexicon in something like the following form:

- | | |
|-------------------|-------------------|
| (a) sincere- | (b) sincere- |
| [+ N] | [+ Anim. Patient] |
| [+ Adj] | |
| [+ Anim. Patient] | |

If inserted into a noun position in a sentence, the phonological rules could add *-ity*.

I think S is correct in pointing out that the existence of these three possible approaches in *Aspects* indicates Chomsky's indecision as to how best to deal with the problem.

But as S notes, there is a further problem. In *SPE*, Chomsky and Halle propose stress prediction rules which require that a complex noun such as *communication* be specified as [[communicate]ion] at

NV V N

the level of the operation of phonological rules. That is, the fact that the noun is deverbal must be available to the stress rules. This fact will not be provided in the first or the third of the three proposed derivations of complex nouns given in *Aspects* which we have just discussed. That is, neither the simple listing of *communication* in the lexicon nor the specifying of *communicate* as either noun or verb

will provide the information necessary to the phonological component that *communication* is a deverbal noun. Conceivably the transformational derivation, the second of Chomsky's proposals, could provide this information, but, as S shows, there are numerous problems besetting such a derivation.

S then shows that in Telugu, there is a class of verbs which must be represented as being derived from nouns in order to take advantage of certain regular and independently motivated phonological processes in the description of these verbs.

We have, then, the following situation: there are cases in languages where we apparently need to have a V node dominating a N node (for English) or a N node dominating a V node (for Telugu) for phonological reasons, but no syntactic derivation proposed so far can provide such a structure.

S's solution to this problem is to propose an essentially new kind of rule: a category-changing phrase-structure rule. Thus, the grammar of Telugu would need a rule

$$(1) \quad V \rightarrow N$$

while to that of English we would add

$$(2) \quad N \rightarrow V$$

Now it seems to me that while such a mechanism appears to solve the problem at hand, it raises new questions for language description that may be just as difficult as those it is designed to solve. In discussing these questions, I will restrict myself to considerations of the formal properties of an "*Aspects* model" grammar, since that is the model within which S's solution is proposed.

First, according to the framework in the spirit of which such rules are proposed, lexical categories are appropriately used to introduce lexical items. To allow a lexical category to introduce another lexical category obscures the important distinction between lexical and "major" categories (such as NP, VP, etc.; see *Aspects* p. 74). In other words, the status of such rules as (1) and (2) is not clear, since they neither create structure nor introduce lexical items. Now S might well argue that this uncertain status of such rules is to be expected, given the fact that a totally new kind of rule is being proposed. But to me, it strongly suggests that the problem should not be handled in the phrase-structure part of the grammar. Phrase-structure rules should create phrase-structure needed for the operation of transformations; any added function is added complexity. We will return to this point below where we will

see a solution which does not add to the functions to be performed by the phrase-structure component.

Second, it is conceivable that one language could require both rule (/) and rule (ə). In such a language, there would be nothing to prevent an infinite derivation in which the rules simply took turns

$$\begin{array}{c} V \\ \downarrow \\ N \\ \downarrow \\ V \\ \downarrow \\ N \\ \vdots \end{array}$$

applying: This, of course, does not happen in a grammar in which lexical categories can only dominate lexical items. Such an infinite derivation could perhaps be prevented by imposing an extrinsic ordering on the phrase-structure rules, but, as far as I know, such a device would not be needed for a grammar without category-changing phrase-structure rules.

Third, in a language rich in derivational morphology, such as English, almost every lexical category can become another lexical category by the addition of the appropriate suffix. In English, for example, we can observe the following processes among others:

Adj → V	final-finalize
N → V	glory-glorify
V → N	refuse-refusal
N → Adj	woman-womanly
Adj → N	real-reality
V → Adj	wash-washable

Further, there are cases in which adjectives become negative adjectives and verbs become negative verbs, to describe which we might propose, analogously to S's rules,

Adj → Adj
V → V

The complications which such facts would entail for a phrase-structure component of the type S is preposing are clearly enormous.

Finally, though S suggests that for a rule such as (a), only certain nouns will be insertable, thus preventing *boy*, for example, from being described as a verb dominated by a noun, the mechanism whereby this sort of context-sensitivity could be incorporated would

also be an innovation in grammatical theory. I know of no other case of lexical insertion where a lexical item needs to be sensitive to the node *above* the lexical category which dominates that lexical item.

An approach which would overcome some of these difficulties would be to consider a lexicon which includes word formation rules of the sort proposed in Halle (1973) and Thompson (1973). The principal advantages of this approach are several. First, since word-creation is properly a function of neither the transformational component nor the phrase-structure component, the appropriate part of the grammar for describing such a process would appear to be the lexicon.

Second, there is no problem in representing the morphologically complex form as being one lexical category while being derived from another lexical category. Thus, if we take the Telugu denominal verbs as an example, to relate *prēma* 'love (N)' to *prēmīnc* 'love (V),' we might propose a rule such as

$$[X]_N + \text{-inc} \rightarrow [[X]_N \text{-inc}]_V^1$$

The morphologically complex form can be inserted into a phrase-marker with its full derivational history recorded, thus providing the necessary information for operation of phonological rules.

Finally, such an approach avoids the problems discussed above which a linguistic theory confronts if it includes category-changing phrase-structure rules.

The solution I am suggesting also constitutes an innovation over the sort of grammar proposed by Chomsky in *Aspects*. But it is clear that some mechanism is needed to account for such facts as S has presented; I am hopeful that more research will be done to investigate the possibilities of accounting for these facts in an enriched lexicon.

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1. The actual rule, of course, might need to include constraints describing just what nouns can undergo this rule.

E. Annamalai and K. Rangan

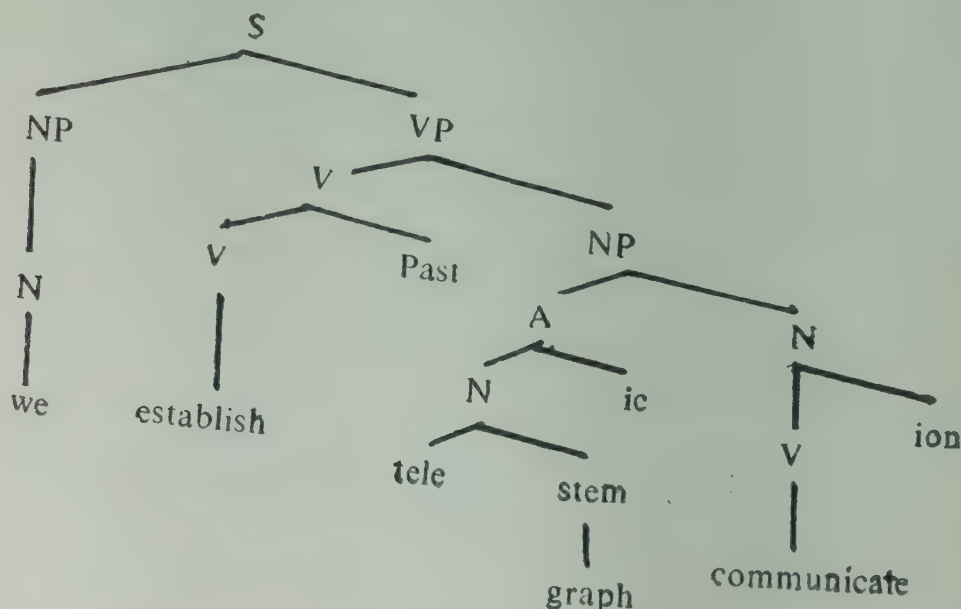
CHIL, Mysore

Discussing a revision of the existing theoretical model, Chomsky emphasises the point that it is "entirely an empirical issue" (Chomsky 1970: 185). Satyanarayana (1973) has taken up two related empirical issues for discussion and on that basis proposes a revision in one component of the model. The issues are relating the formally and semantically related lexical items in the grammar and the compatability between the syntactic (transformational) component and the phonological component of the grammar. The former is required for the reasons of intuition and generalisation and the latter is necessary since the output of the transformational component is the input for the phonological component. Satyanarayana claims that the existing theories within the generative frame work, viz. the transformationalist and the lexicalist, do not adequately account for these and even consist of internal inconsistency and so proposes a revision of the phrase structure component. It will be shown below that the proposed revision is unnecessary, has deficiency and has unacceptable consequences.

Let us see first the issue of incompatibility. Chomsky and Halle (1968:8) in their description of English Phonology have the following surface structure for the sentence.

1) We established telegraphic communication.

(2)



At the right most bottom of the above tree diagram which is relevant for the discussion of this paper we have the configuration (3)



This is needed for the placement of stress. Satyanarayana argues that no transformational rule gives this configuration. There is the configuration of (4) NP

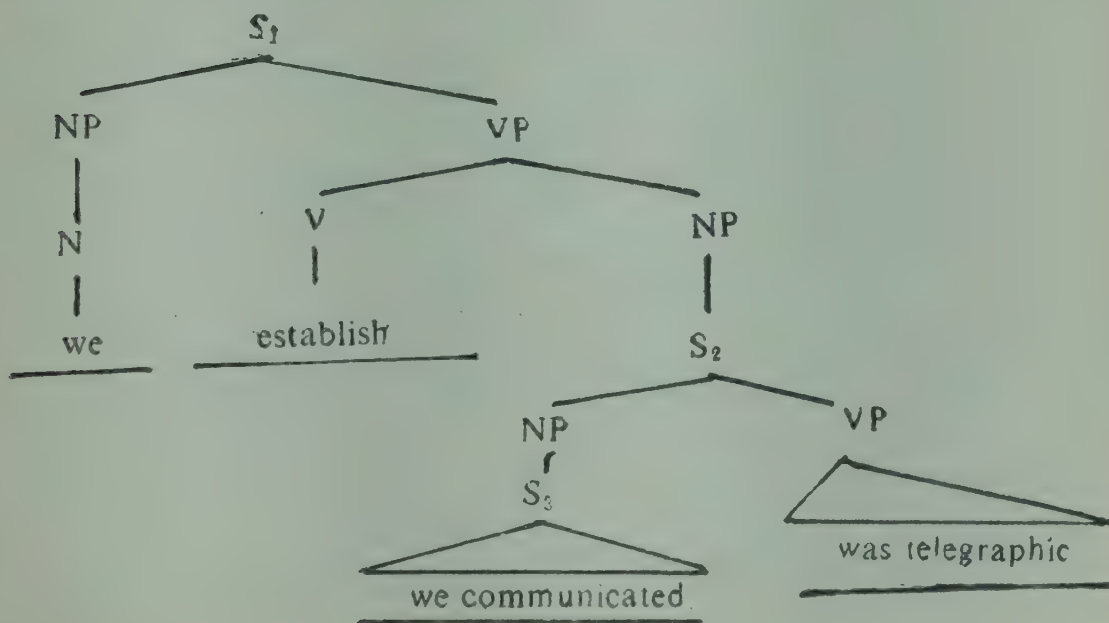


in syntactic description but there is no way in the existing literature to convert (4) to the (3) according to him (p 333). The latter statement is not true. The tree pruning convention proposed by Ross (1969:289-499) will delete S automatically, when it does not dominate both NP and VP. When the NP in (4) is deleted, S is pruned and we get (5) NP This is sufficient for placing the right stress.

↓

When the verb *communicate* is related to the noun *communication* transformationally in the transformationalist model, we get exactly (5) as the output of the transformational component. The simplified underlying structure of (1) at some stage in the derivation will be something like the following.

(6)



When *we* in S_3 is deleted and the remaining *V* dominated by NP is nominalised we get *communication*. When S_3 is pruned we have the right node structure for the stress rule. The two ways of effecting the nominalisation have been discussed in Chomsky (1965:P.185, p. 235)

Chomsky preferred in *Aspects* the transformationalist position for relating a verb like *communicate* with a noun like *communication* although in *Remarks* he rejects this position and proposes the lexicalist position, which he suggested as an alternative analysis in *Aspects* itself in a foot note (pp. 219-20) on Chapter 2 (not towards the end of the book as Satyanarayana (p. 332) says). Chomsky's preference for the transformationalist position in *Aspects* can be clearly seen in his explicit revision in the later part of the book (pp. 186-7) of the lexical treatment of the pair *sincere* and *sincerity* in the earlier chapter (p. 65). Therefore Satyanarayana (p. 330) is wrong in criticising Chomsky of "hesitation.. on this matter". It must be remembered that *Aspects*, as stated in the Preface, is "an exploratory study...(and) more often the discussion will merely raise issues and consider possible approaches to them without reaching any definite conclusion" (p. vi)

The lexicalist position may pose the problem of incompatibility discussed here. In this model words like *communication* will be dominated only by the N node. But in the lexicon these words will have been marked with the feature noun as well as verb. One possible way to solve this problem within the lexicalist model is to have the convention that the lexical entries marked for both noun and verb and entered under N node will behave also like a verb for the phonological rules.

The above discussion clearly shows that the existing theory or theories can satisfactorily handle the problem brought to notice by Satyanarayana. Therefore there is no need for revising the theory, especially the transformationalist theory. Furthermore, the revision proposed by Satyanarayana is deficient and too drastic for the problem in hand. Even if the phrase structure component is revised as proposed by Satyanarayana, the ambiguity of nouns like *communication*, which have more than one semantic relation with the corresponding verb cannot be explained. (This is true of the lexicalist position also). *Communication* means 'the process of communicating as in 7 and 'the message which is communicated' as in 8.

7. Communication is essential for better understanding between people.

8. They did not receive the communication. *Communication* in the first meaning may be derived by nominalising the predicate and in the second meaning by preposing and adjoining the non-lexical head to the following participle within the transformalist model.

The revision in the phrase structure component is not the inclusion of just a new category changing rule like $N \rightarrow V$ in this component as claimed by Satyanarayana, since this is not a newly innovated type of rule and has been accepted for quite some time in the transformational grammar in rules like $NP \rightarrow S$, which. Satyanarayana (p. 382) himself has used. The function of the rules suggested by Satyanarayana is not simply changing the category as believed by him but is establishing relation between lexical items. His examples like *prēma* 'love' and *prēmin* 'make love' from Telugu and the discussion relating them clearly bring this out. It is not necessary to bring a new P.S. rule to relate these lexical items in Telugu. (It is theoretically unacceptable to have phonological and historical reasons for rewriting V as N as Satyanarayana (p. 34) has done instead of syntactic and semantic reasons). To reject the transformationalist position for relating the pairs, he must prove that there is no transformational relation between the pair. The relation of the pairs can be easily dealt with by the lexicalist by having a "feature structure of the 'neutral' lexical entry (Chomsky 1965:190). This neutral lexical entry will be equivalent to the category stem used in the Sound Pattern of English and so is not so ad hoc as shown by Satyanarayana (p. 341) Revising the phrase structure component instead with such PS rules like $N \rightarrow V$ and $V \rightarrow N$ will allow also rules like $V \rightarrow \text{Adj}$ (to relate *black* and *blacken*), $\text{Adj} \rightarrow V$ (to relate *rotate* and *rotary*), $N \rightarrow \text{Adj}$ (to relate *sincere* and *sincerity*) $\text{Adj} \rightarrow N$ to relate *beautiful* and *beauty*) etc. to relate lexical items in the phrase structure component.

But in the existing theories the lexical, items are related either in the lexicon by features or in the transformational component by rules. It is not the function of the phrase structure rule. Assigning this function to the phrase structure, for which there seems to be no compelling reason, blurs the distinction between the various components of the grammar. Moreover, it gives the grammar generative power which is far too strong and makes it less acceptable as a grammar of the natural language.

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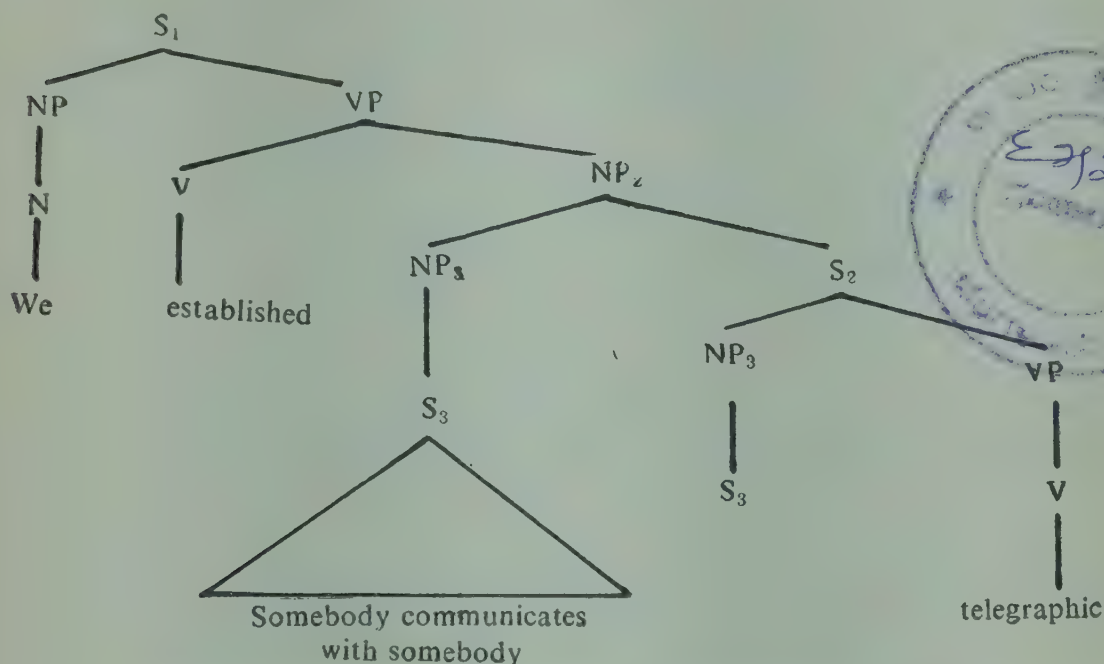
Dr. Satyanarayana, through this article, explains the incompatibility of the current syntactic and phonological descriptions of English and proposes a revision of the phrase-structure component.

First section of this paper is criticism of the following works :-
Chomsky, N (1965) 'Aspects of the Theory of Syntax', Chomsky, N (1970) 'Remarks on nominalisation', Chomsky, N and M. Halle (1968) 'The Sound Pattern of English', Lakoff, George (1965) 'On the nature of Syntactic Irregularity', Newmeyer, Frederick J. (1970) 'The Derivation of the English Action Nominalization.' Since Chomsky (1970) and Newmeyer (1970) are not available at present, I am not in a position to review his criticism of them.

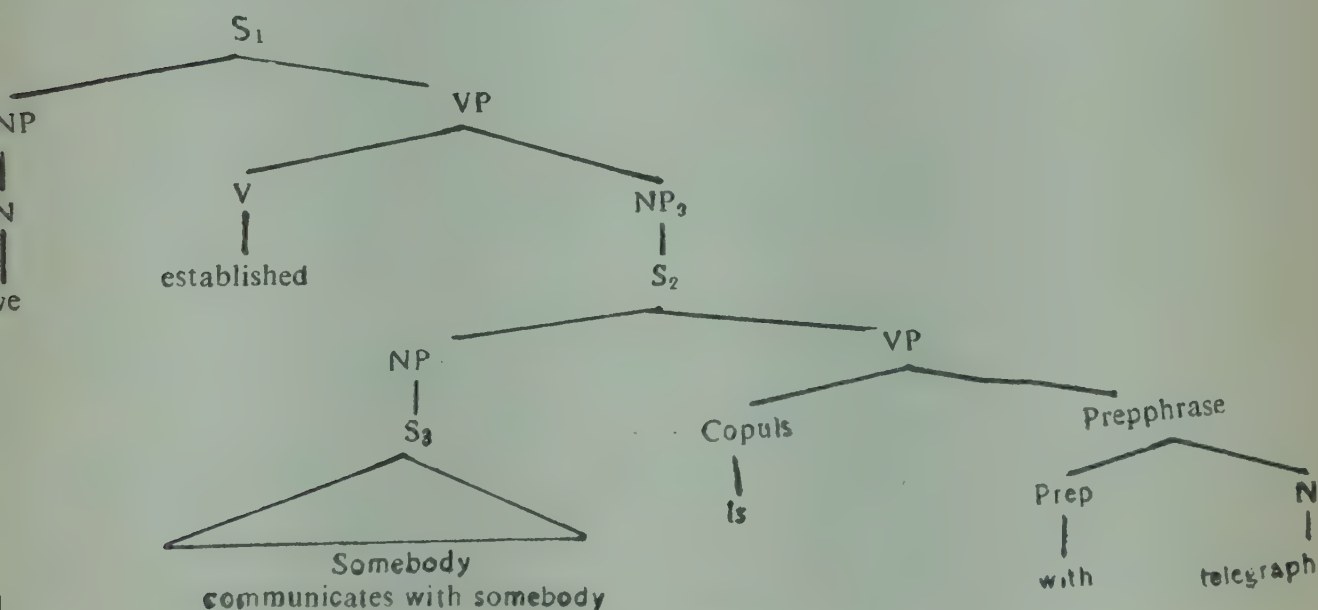
In 'Aspects of the Theory of Syntax' Chomsky is proposing a theory to analyse the aspects of the Syntactic theory. His aim in that work was not a complete analysis of the English Syntax. Hence the author's criticism that Chomsky has not accounted for the similarities enjoyed by 'sincere' and 'sincerity' is not of such value. However the author himself admits that Chomsky has recognised such similarities.

On page 332 Satyanarayana says that "adopting the analysis of transformationalists, one might postulate the deep structure of (8) as (16) again ignoring irrelevant details".

8 is We established telegraphic communication and 16 is as follows:-



I don't know how the above deep structure is postulated adopting the analysis of transformationalists. In my opinion the following DS will be more acceptable for transformationalist:-



Since DS is a convenient base postulated for correct semantic interpretation and surface structure derivation it is possible to accept 32 and 37 as DSs of 31 & 36 respectively. As the author and John N. Ross proposes, derivation of adjectives from nouns is to be done in a transformational grammar of English.

Ungrammaticality of 46 in the article (Harold's proving of slaying the dragon that he is a sadist.) is not due to the adjacent but is due to the incorrect usage of genitive 'S' and 'of' in such a way that the sentence does not have any interpretation at all. "Harold's slaying the dragon" S proving that he is a sadist" gives the correct interpretation.

Commenting on Newmeyer (1970) the author says that it is the higher predicate that decides whether an action nominal can be added or a fact nominal. But in Both the following sentences :-

"the act of Harry's driving the car startled me.

"the fact of her being ill startled me" the higher (matrix) predicate is the same. Therefore the generalisation made by the author needs some modification. His generalisation will work only when the action or fact nominal is embedded in the object NP of the matrix predicate.

In section II the author is proposing a category changing rule in the phrase-structure component of Telugu ie. $V \rightarrow N$ In his opinion -inc-, cēs and paḍ are verbal endings which will be added by phonological rules. In my opinion the occurrence of 'cēs' and 'paḍ' in the position of 'inc' in Telugu gives support to an analysis in which the P. S. component will be having a rule $V \rightarrow N + Vb$. (Verbal). The N in this rule can be the object or the adverbial of the verbal. -inc- may be a suffix derived from a verb in Telugu. But I am unable to say much on it since I am not a native speaker of Telugu. Towards the end of Section II the author says that 'the presence of the accusative post position in (12) (asvāḷḍu kenneḍini hatya cēsēḍu 'Oswald murdered Kennedy') shows that 'hatya cēs' is the verb and is to be analysed in a way similar to prēmīnc'. If that is the case

'oru sinime kaaṇiccu' showed a film,' in

ṇāan raamane oru sinima kaaṇiccu "I showed Rama a film"

should also be treated like that ie. PS component will have a category changing rule $V \rightarrow N$ and a phonological rule will be applied on it to get the surface structure. I doubt if such an analysis will be accepted by any linguist

The category changing rule $N \rightarrow V$ proposed by the author may be useful to derive verbal nouns like kola 'murder' paṇi 'work' in Malayalam. Derivation of such words from embedded sentences will create problems in sentences like

raaman kṛiṣṇane kola ceytu 'Rama assassinated Krishna' where a transitive verb is nominalised.

In section III Dr. Satyanarayana is suggesting that the linguistic theory has to tolerate category changing rules in the PS component of grammars if it has to capture significant generalisations without Jeopardising the compatibility of various components within a grammar. Section IV is a recapitulation of the author's findings of this paper. His questions towards the end of the paper are to be thought about.

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Dr. Satyanarayana has presented an interesting discussion on some of the problems of current grammatical theory. The paper has four sections. Section I—Points out some of the inadequacies of present day grammatical description. A Discussion of New Meyer's article 'the Derivation of the English Action nominalization' is also presented in this section. The arguments of New Meyer are not acceptable to Dr. Satyanarayana.

It was assumed that it is the higher predicate that decides whether an action nominal can be embedded or a fact nominal (p. 338). But I feel that the statement needs modification. The higher predicate can decide the type of nominal to be embedded only if the nominal sentence is the object of the main predicate, other wise the higher predicate cannot make the choice of the nominals. Consider the following sentences :

1. (The fact of), Harry's being absent surprised one.
2. The fact of, Harry's having gained a prize surprised me.
3. (The act of), Harry's drawing the picture surprised me.
4. I witnessed (the act of) Hari's drawing the picture.
5. I heard (the act of) Hari's drawing the picture.
6. I heard (the fact of) Hari's drawing the picture.

Again, New Meyer's opinion regarding the non-inter-vension of negatives in action nominals is not acceptable to the author. (p. 338). According to Dr. P. S. it is impossible to interpret a sentence like. (The act of) is deleted. But I think that sentences such as:

7. The fact of John's not writing letters made her unhappy.
8. (The fact of) John's not eating meals made her unhappy are grammatical and acceptable to most of the speakers. (It seems that the sentences of the above type are more acceptable than those which are of the type (50).

Section I presents a case in Telugu where a V immediately dominates N. On page 343, Dr. P. S. gives some nouns which take words like *cēs*, *paḍ* etc. to become verbs. He claims that these constructions can be analyzed the same way as *-inc* constructions i. e. later phonological rule adding the suffix *-inc* to all these verbs giving the surface representation. He has also stated that these affixes are verbs by themselves. Dr. Satyanarayana's argument is that the presence of the accusative *-ni* shows that *hatya cēs* is the verbs in the sentence :

āsvalḍu kennedini hatya cēseḍu.

But it should be remembered that some verbs can have two objects See the following Malayalam sentences :

9. *ṇaan pustakam tarjama ceytu = ṇaan pustakattinRe tarjama ceytu.*

(I translated a book)

10. *ayaaḷ bhaaryaye kuRRam PaRaṇṇu =*

ayaaḷ bhaaryayute KuRRam PaRaṇṇu. (He blamed his wife) where 'inRe', and 'ute' are genitive case suffixes. It is seen that *tarjama* and *KuRRam* are the objects of the verbs *ceytu* and *PaRaṇṇu* respectively, and *pustakam* and *bhaarya* are the objects of the VPs *tarjama ceytu* and *kuRRam PaRaṇṇu*.

In that case *hatya cēs*, *anuvadam cēs* etc cannot be treated as verbs derived from nouns -

His proposed rule $N \rightarrow V$, seems to be more applicable than the one adopted by the present day transformationalists in the case of nouns derived from verbs in Malayalam.

On page 345, Dr. Satyanarayana has formulated another rule also Verb Denoting rule. If the realm of the dummy verbs are not restricted, it may be possible to have all verbs as transitives in the surface structure. For example:—

He ran - He ran a run (Mal-*ootṭam ooti*)

He jumped -He jumped a jump? (Ma. *caatṭam caati*)

Regarding his question on adjectives one may have to derive adjectives from different sources, i. e., from verbs, nouns etc. The question deserves careful and detailed study.

Reply by P. Satyanarayana

It seems that Vijayavenugopal is not sure of the thrust of the paper. He agrees with me in that “the present *format of T. G. Grammar*, more precisely its components, are incompatible with each other.” [my italics]. At the same time it is not clear to him whether I was “criticizing the theory or grammar or both.” As mentioned in my reply to Annamalai and Rangan’s comments, the point was not whether a particular grammar of English or Telugu written in a particular theory is correct or not; but whether the theory allows one to describe natural language adequately at all. This, of course, can be found out after looking at an existing grammar within the theory and trying to see if changes made in the grammar to reflect the newly discovered facts can be accommodated within the theory. To this extent, the paper raised a theoretical question.

There seems to be some truth in V’s comment that my attempts “could be taken as a rigorous application of the theory to natural languages.” But, that is not all as he thinks. My attempt was to find a way to modify the theory itself to account for the facts. Of course, the particular way suggested may or may not be the best possible one.

It is well known that the term “deep structure” is used in the literature ambiguously. In one sense it is used more or less loosely to stand for a structure underlying a sentence without much regard to the actual form of the terminal nodes in the P-marker. In the second sense it is used as a technical term which has been rigorously defined (for instance, by Chomsky (1971) and Lakoff (1971)), viz., that stage of the derivation where all the lexical insertions took place and no non-lexical transformations have applied yet. It is in the second sense that linguists are divided as to whether there exists a “deep structure” or not; but as mentioned in the paper, for the current problem it is immaterial and hence any reference to “deep structure” is intended to be in the first sense. Specifically the use of term is not supposed to commit me to any particular school. Hence it is not true that the paper was inconsistent as V thought and any confusion created is regretted.

The other point where V thought I was inconsistent also does not show any inconsistency. I attempted to give a transformationalist analysis only to show that it cannot be carried through till the end. Hence if my arguments are right, my conclusion is also right.

V points out that his two Tamil sentences (1a) and (1b) are semantically identical.

(1a) veelan cuuranai-k-konraan 'Velan killed Curan'

(1b) veelan cuuranai-k-kolai ceytaan

He then proceeds to posit a single deep structure for both (1a) and (1b) in order to exhibit their semantic identity. However, he does not show how his analysis accounts for his claim, if correct, that *kolai* 'killing' in (1b) is the object of *ceytaan* 'did' as opposed to the non occurrence of such relation in (1a). Thus his analysis is still incomplete. Further, he does not provide any reasons for calling *kol* an NP (as opposed to, say, N) or any explanation of what the relation between the two branches of V-NP action and Action-or how the particular structure is arrived at.

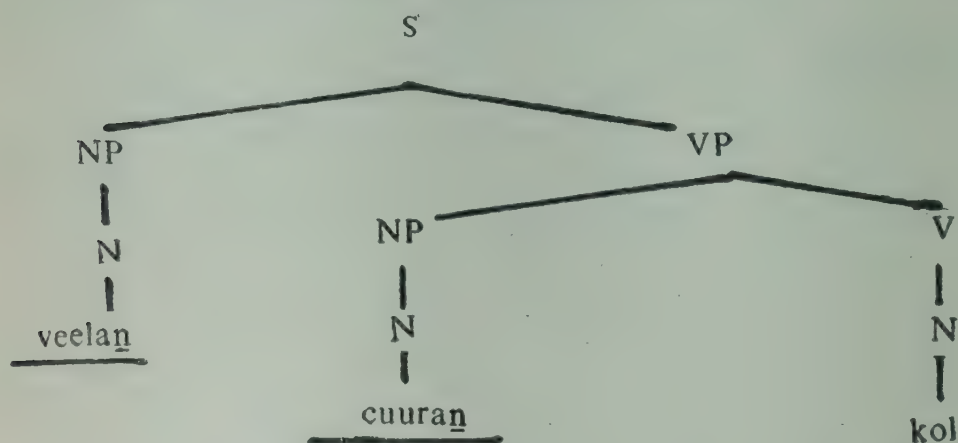
His analysis of the Telugu sentences is again unacceptable because his data itself is wrong. His sentence (4) should have been

nēnu dēmuḍiki pūja cēsēnu

I God + dative worship did

'I worshipped God.' (lit. I did worship to God)

In my analysis, the two Tamil sentences will have the deep structure (in the first sense) approximately as follows:



Morphophonemic and phonological rules similar to those of V and case marking rules will finally yield the two surface structures and in both of them *cuuran* is the direct object as evidenced by the accusative ending *ai*. One piece of evidence in support of this claim is that corresponding to (2) there is no (3).¹

(2) veelan konra cuuran

Velan killed Curan 'Curan whom Velan killed'

1. I am thankful to G. Nirmala for giving me the Tamil data.

- (3) *veelan ceyta cuuranai-k-kolai
 Velan done Curan + accusative + killing
 'killing of Curan which Velan did'

Notice that such constructions are not "peculiar" with *cey* 'do' as demonstrated by the existence of (4) which is related to (5).

- (4) naan saamikku ceyta puujai
 I God + dative done (performed) worship
 ? 'The worship I did to God'

- (5) naan saamikku puujai ceydeen
 I God + dative worship did (performed)
 'I worshipped God.'

In this respect Telugu and Tamil seem to behave similarly.

V could not successfully express the "grammatical relationship involved between the constituents" nouns and verbs and hence no comment can be made on whether or not they are expressed in the proposed new P-S rules. Of course, any rewriting rule makes the claim that there is a semantic relationship between the constituent on the left hand side and those on the right hand side and so V's statement concerning this is not correct.

Please also see my reply to Annamalai & Rangan concerning my so-called criticism of Chomsky.

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- Lakoff, George (1971) "On Generative Semantics," in Steinberg and Jakobovits (eds.) *Semantics*. pp. 232-296.

While agreeing that the paper has exposed "some genuine defects or gaps" in the current theory, Dr. Householder does not agree to the postulation of new type of P-S rules to handle the situation, for intuitive reasons.

According to him, "more traditional" P-S rules "reflect the infinite creativity of language." He further indicates that the creation of new "complex words" (much less the use of old complex words)

does not exhibit enough creativity to be handled by the P-S component. However, these questions seem to be open to debate. For example, in the early literature we find P-S rules such as $V \rightarrow V_I$, $N \rightarrow N_a$. These rules do not seem to convey any "creativity". Perhaps if we group together those nouns which can become verbs, say, as N_v , and so on, and use rules such as $V \rightarrow N_v$, then it will not be far from the tradition. I realize, however, that the problem is not this simple and there is ample room for further research to explain the facts better.

As H pointed out, the proposal made in the paper is *not inconsistent* with the possibility of having all V and no N or vice versa; only practically speaking, in individual languages some words are basically nouns and some are verbs and some others are morphophonemically "derived" from them. Bach's proposal, which transformationally derives every noun from an underlying relative clause with that word in the predicate position, does not address the questions addressed here. Specifically, it does not consider derived nominals at all, nor does it mention anything about certain words having double parentheses (say, one as a noun and one as a verb). In fact, he does not discuss the precise formulation of his transformations at all. Thus not much can be said about that proposal in the present context.

Lees' attempt at the explanation of English nominalizations is a pioneering work in transformational grammar. However, that analysis is subject to the same comment as one of the positions outlined (towards the end) in Chomsk's *Aspects*. Please see my reply to Annamalai & Rangan in this regard.

The new rules proposed in the paper, as they are, cannot be treated as T-rules, even after adding the appropriate contexts, as H conjectured, since then they cannot solve the problem which they are intended to solve.

H's comment about "infinite loop" is not really a serious problem. The mere existence of a pair of P-S rules in which the left hand side of each occurs on the right hand side of the other does not create any special problem. In the derivation of any given sentence, the termination of this loop will be determined by the sentence itself. For example, even though S and NP appear in the expansions of NP and S respectively, in the P-marker of any given sentence there are only certain n levels of S. Any postulated underlying P-marker of a sentence with more than needed S levels will be thrown out because of ill-formedness. It is true, of course, that there are non-trivial

cases where one sentence is embedded in another sentence and so on upto any n levels, whereas there is a limit on the levels of, say N , in any structure such as N — Usually 1 or 2. This is one of the



reasons the proposed rules are considered to be of a new type (as opposed to say, a rule such as $VP \rightarrow V NP NP \dots NP$, with 67 NPs) and if there is no better alternative, the theory needs to allow such rules. Please see Thompson's comments and my reply for an alternative.

Dr. Thomson raises some very interesting questions to the proposed analysis and also presents an alternative analysis, which seems intuitively more satisfactory, though still leaving some questions unanswered.

Let us first consider the questions she raised against the revision of P-S component. She says that in a language that may require both $N \rightarrow V$ and $V \rightarrow N$, "there would be nothing to prevent an infinite derivation in which the rules simply took turns applying." This question is same as one of Householder's comments and the reply may be found in the reply to his comments.

One can agree with T that there may be languages with nouns derived from adjectives and verbs, verbs derived from nouns and adjectives, and so on. However, this does not necessarily mean complication. Further, it would seem that no matter what analysis we take, this will pose the same complication.

The presence of single words for negative nouns, verbs and adjectives through affixation may perhaps be accounted for in a fashion similar to, say, attachment of plural marker to nouns, i. e., without having two layers of ADJ, N, etc. The study of negations is complex by itself and no claims are being made here except that probably there is no need to make such words be dominated by the same kind of node twice. Obviously, this question deserves a deeper study.

The type of "context sensitivity" the proposed P-S rules bring into play in syntax is admittedly new and the only excuse that can at present be given is, to borrow T's words, "some mechanism is needed to account for such facts." Alternatively, as suggested in my reply to Householder, one might attempt to class the nouns, verbs, etc. into those that can change their categories and those that cannot

and use the rules $V \rightarrow N_v \rightarrow V_n$, etc. Doing this will not be any more "costly" because no matter what analysis we choose, we have to note this information any way.

T also raises a question as to the status of such rules as $N \rightarrow V$ and $V \rightarrow N$. She says "Phrase-Structure rules should create phrase-structure needed for the operation of transformations; any added function is added complexity." However, as was described towards the end of the paper, there is an evidence to show that the structure generated by such rules is used by transformations, viz., the Verb-Demoting rule. If my analysis is correct, in certain sentences, the noun that starts out as a verb is "demoted" to a noun (specifically, to object position) leaving the V node empty. Then a rule of the sort which inserts *be* as tense-bearer in the case of predicative adjectives a dummy verb such as *cēs* in Telugu, *commit* in English (e. g., *Ray committed a murder*), *cey* in Tamil and Malayalam, and so on.

Finally, T's proposal of lexical rules seems to face two of the above problems that she raised against my proposal. The first one is, : In languages which have both nouns derived from verbs and denominal verbs, how can one stop the derivation of nouns from verbs and verbs from nouns infinitely? Filters of the sort discussed in Halle (1973) may well be the answer. But the same kind of filters could conceivably be invoked in support of my proposal. Secondly, as mentioned above, it seems that the complications T has in mind in regard to the new P-S rules for languages with rich derivational morphology will also be complications within this approach.

Further, as was realized by T, in her analysis, the lexical insertion rule will have to be made complex so as to allow insertion of complex formatives with thier "full derivational history." This of course is not without problems. For example, what syntactic reasons do we have to let the full derivational history of words go through the syntactic component (on the way to phonology)? In other words, if phonology is the only component that needs this history, what is the reason for sending this history to the syntactic component? Two alternatives seem possible. One is to look for syntactic rules such as my Verb-Domoting rule, which do need such history. The other is to take some of the "rules of phonology" (viz., the ones that require the derivational history) and include them in the "lexicon." Note that the latter approach is in line with the philosophy that "since wordcreation is properly a function of neither the transformational component nor the phrase-structure

component, the appropriate part of the grammar for describing such a process would appear to be the lexicon." Any detailed exploration of these ideas will be beyond the scope of this discussion. But I hope this discussion will stimulate further research and will result in more satisfactory analyses.

Notice that T's proposal also calls for a fundamental change in the current theory of transformational generative grammars. It calls for the inclusion of a new *linguistic level*, perhaps to be called *derivational morphology*.

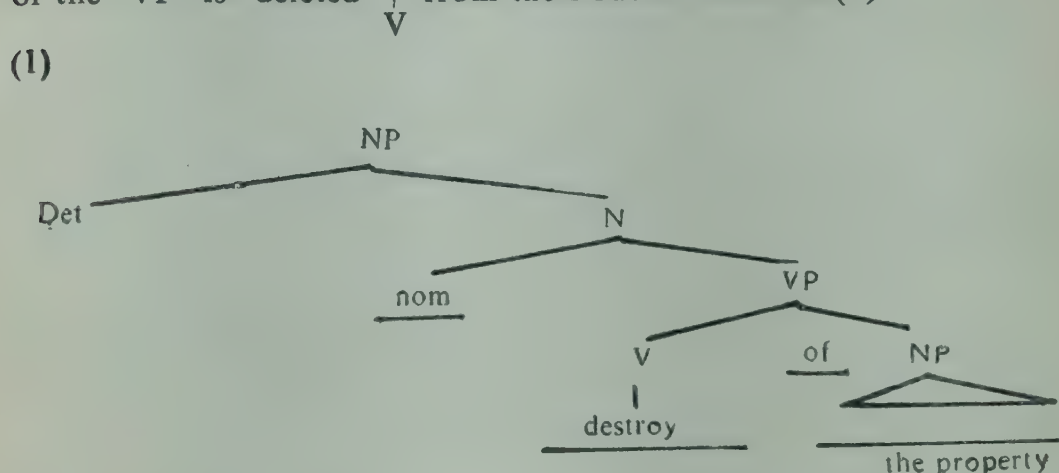
The problem that the original paper addresses is the derivation of *precise* structure that the phonological component of grammars need. I argued that there are some cases where those structures are *not* supplied by the syntactic (or is it semantico-syntactic?) component of grammar, whereas under the theory of transformational generative grammars it is supposed to feed the phonological component, thus bringing up a theoretical question. One can, of course, argue that the problem brought up is not a problem for the theory and that it is only a problem for a specific grammar of a specific language within the theory by constructing a grammar within the theory to account for the problem.

Drs. Annamalai and Rangan say that "the proposed revision is unnecessary" thus presupposing that it is not a theoretical problem. They mention both lexicalist and transformationalist approaches. Their claim amounts to saying that in the transformationalist position, there is not even a non-theoretical problem. To the lexicalist of course, there is a problem but it can be "satisfactorily" handled within the existing theory.

I will first try to argue that the transformationalist position is at best questionable and leaves many questions unanswered and that contrary to A & R's claim even then it does not yield the needed structures in all cases, thus reasserting the existence of the problem. Then I will show that the lexicalist position, though stronger than the transformationalist position (at least in regard to nominalization), the solution to the problem requires a *theoretical* innovation, not just rewriting grammars of specific languages

Further A & R's argument that "the proposed revision has deficiency" actually brings to surface a problem which existed all along and has not been addressed by the present paper and to which the proposed revision neither adds nor subtracts.

As A & R mention, Chomsky (1965) did mention a nominalization transformation.¹ However, it does *not always* yield the needed structures, viz., N. It can yield that structure if the “object” of the VP is deleted | from the structure such as (1)



But, if the object is not deleted, as in *their destruction of the property*, the syntactic component cannot feed in the right structures to the phonological component. In fact, in (1) V “is not” as N and *nom* V is not even a constituent. One might suggest (especially because Chomsky expressed a doubt) that *destruction* in *their destruction of the property* is not a noun. Then the questions that arise are: What is it? and why and how does it allow the stress rules to apply twice (once as a verb and once as whatever it is in the surface)? It should be noted that these questions arise in addition to the points raised by Chomsky in *Remarks*. To date there is no known attempt to answer some of these problems within the transformationalist approach. Thus the transformationalist does not have too much ground. Incidentally, the structure (6) of A & R

1. I very much and humbly regret that the language used in the original paper is not very precise in view of Chomsky (1965; 184–186) and the references cited therein. However, A&R’s remark about my criticism is not valid. First of all my criticism was of Chomsky (1965), that is the theory, not of Chomsky. Secondly, it is not a criticism in its bad sense, but a criticism in its good sense. I think that unless one looks at the weaknesses in the existing theory, science will never progress. Third, unlike an unrehearsed talk, a book has an advantage in that the author can go back and erase or modify previous pages. The mere fact that Chomsky did not include even a footnote to warn the readers that the analysis of *sincerity* will be changed later shows that he was not completely sure. In fact in a footnote on p. 219 he says that “it will not be necessary to derive the former [noun] by transformation for the latter [verb].” Of course, it should not be taken as a reflection on his intellect, which is undoubtedly very high; only as a reflection on the complexity of the problem at hand.

cannot occur anywhere in the derivation of *We established telegraphic communication* since the verb *establish* in the current sense does not take sentential complements as object.

As far as the Telugu data is concerned, there is no analysis-lexicalist or transformationalist-presented so far and hence A & R cannot rightly criticise (whether in the bad sense or good sense) of "rejecting the transformationalist position." In fact one may be hard pressed to find a transformational relation of the right kind between the nouns and verbs; only further research can tell whether there can be one.

A&R's explanation of the problem within the lexicalist position is at best unclear. It simply ignores the problem of applying certain phonological rules (stress rules) *twice* to such nouns as *communication* and there seems no way to handle this without affecting the theory.

The notion "neutral lexical entry" of Chomsky (1970) is only a functional notion and is not the name of a lexical or a syntactic category. As Chomsky would put it, it "should be distinguished from categorial notions such as 'noun', 'verb'." The same is true of the notion "stem". In the word *walked*, *walk* is functionally the "stem", but it would merely confuse the categorial notions to add the category "stem" either as a syntactic category or as a lexical category of this word. Further it would fail to note the fact that the notion of "stem" is redundant in such representation. In addition, if one uses "stem" as an artefact to force an extracycle at the time of phonological rule application, then in addition to unnecessarily and may be incorrectly applying extra rules to almost every word, it does not solve the problems discussed in the paper. The reason is that there will be the same number of cycles whether the word is *communicate* or *communication*.

A & R seem to be split minded regarding the notion of (category changing) P-S rules of the sort described in the paper. On the one hand they say they are "not newly innovated type of rules" and on the other hand they also say that including such rules "blurs the distinction between the various components of the grammar." A & R are right when they say that "the function of the rules suggested is not simply changing the category"; but as the discussion that led to the postulation of the rules makes it clear, the proposed rules are supposed to express the fact that there is morphophonemic and semantic relationship between the noun and the verb and so on. Any historical evidence is only an extra argument. In addition, by calling it a P-S rule, an implicit claim is

made that there is a syntactic relationship, too. They are called "category changing" rules only as a characterization of the syntactic process going on.

A & R seem to be concerned about having several rules which are similar to $N \rightarrow V$. But, if the facts point out to that, and if this is the proper way to handle the situation, number should not be a criterion.

Finally, A & R argue that lexical items are related either in the lexicon or in the transformational component and not in the P-S component, which seems to have some truth to it. Granted that the proposal called for extra power to the P-S component, one should not forget that the problem begs for a theoretical adjustment. It is aptly said that "it is to be expected that enrichment of one component of the grammar will permit simplification in other parts"² and the proposal made suggests the enrichment of the P-S component, with the hope that other components may remain as they were. This, of course, open for empirical and theoretical verification, and it may well turn out that lexicon may well turn out that lexicon is the best place to handle the problems discussed.³

The thrust of the original paper was to expose a weak-joint in the current theory of linguistics, rather than complain about the incompleteness of a particular English grammar, or criticizing Chomsky as was thought by R. Sreekumari. There is no doubt that any linguist would recognize the similarities between the English words *criticise* and *criticism*; the question is whether or not there is a systematic, satisfactory and unified way of accounting for these similarities and that is what was pointed to be lacking in the current theory.

According to established conventions, a deep structure which has NP

|
S

is treated as a NP-complement and as such the deep structure S suggests for sentence (8) implies that the verb *establish* takes an object complement, which is not true in the proper sense of *establish*. (In the sense of proving, it can have an object complement as in *Nobody could establish that there are UFO's*.)

Deep structure is not just "a convenient base postulated for correct semantic interpretation and surface structure derivation", it

2. N. Chomsky, *Remarks* (1970) p. 185.

3. In this connection please also read the comments of Sandra A. Thompson and my reply.

is something which supposedly reflects a language user's intuitive feelings about how a sentence is understood and as such the same kind of semantic "peculiarities" should be obtainable at both the deep and surface structure levels. That is if and only if (iff) the deep structure is semantically anomalous, should the surface structure be semantically anomalous; iff the deep structure is redundant should the surface sentence be redundant and so on. However, (31) and (35) (of the paper) are perfectly normal sentences whereas (32) is redundant and it is very hard to understand what (37) means. The fact that (32) and (37) are semantically "strange", to say the least, can be seen clearly by going through their derivations in which only obligatory rules applied. They yield.

*a person who is convicted is a person who is convicted or is it *a person whom someone convicted is a person whom someone convicted.

*somebody is violent breeds somebody hates somebody. To this extent, (32) and (37) cannot be the deep structures of (31) and (35).

S's comment on Ross concerning derivation of adjectives from nouns is not clear and so cannot be answered.

Also S's comment on (46) is misguided and the same is appreciated in view of the fact that Newmeyer's paper was not at her disposal. Newmeyer was attempting to account for the distribution of his (15a-b), (20a b).

- (15) a. the likelihood of John's leaving
- b. John's likelihood of leaving
- (20) a. the filming of Harold's slaying the dragon
- b. *Harold's filming of slaying the dragon

Instead of dwelling on his half-spelled rules, it suffices to note that the point was not what my (47) yields, but whether or not Newmeyer's analysis is based on all relevant data.

It seems that S has misinterpreted the notion of a verb deciding the complement type. This means depending upon the particular verb in the sentence, a particular complement type may not occur. It does not exclude the possibility of several complement types occurring with the same verb. In other words the claim was that the occurrence of a complement type is connected with the verb as opposed to, say, what sex the speaker belongs to, or what the subject of the complement is. Thus S's comment does not hold until one can show that the governing element in the case of subject complement is something other than the verb, say, the tense.

S's comment about the rule for Telugu being V — N + Vb (Verbal) is in need of explanation. For example, what is the meaning of "verbal"? Setting this aside, we can note this aside, we can note that in intuitive terms the N is the "stem" to which affixes are added, irrespective of when they are added. The relationship between the "stem" and the suffix does not seem to be either object-verb or adverb-verb as was thought by her. Further the primary semantic content of the verb derives from the stem, rather than from the suffix and so calling the suffix verbal seems very counter intuitive.

The Malayalam sentence *ñaan raamane oru sinima kaaṇiccu* 'I showed Rama a film' is probably an exception. In any case, the fact that *oru* 'one' precedes it shows that *sinima* 'cinema' is a noun and so is not part of the verb *kaaṇiccu* 'show'. Since it is inanimate it does not have an overt accusative case marker. Without knowing Malayalam I cannot say anything conclusively, but it is hard to explain why Rama got the accusative case ending, as opposed to the dative in several other languages as illustrated by:

Eng. I showed a movie to Rama

Telugu *nēnu rāmuḍiki oka sinīmā cūpincēnu*

Hindi *māi ne rām ko ek sinemā dikhāyī*

One possibility seems to be that *kaaṇiccu* means 'making one see' and so the Malayalam sentence is parallel to Telugu¹

nēnu rāmuṇṇi oka sinīmā cūsīṭaṭlu cēsēnu

I Rama + accu. one cinema see + so that did 'I made Rama see a movie' Turning to the main point, we note that the presence of case endings is only one way of judging the status of a word, but other factors need to be taken into consideration, too.

Again my knowledge of Malayalam is not enough to make any definitive comments on the derivation of *kola paṇi* etc., but if they are as in Telugu, they are underlying nouns and can occur under the node V also, and take *cey* as a verbal ending. Adding to the confusion, the same *cey* appears even when the verb is demoted, and made the object as in the case of *tarjama* 'translate(v), translation(n)'. Thus *tarjama cey* in one construction has both the object and the dummy verb and in another construction it is just the verb. In any given sentence, the question whether Verb-Demoting has applied and thus *tarjama* is the direct object or not can probably be answered by the presence of constructions which can be translated as *the translation which I did* (i. e., something like *naan cey? tarjama*).

1. For a detailed discussion of such constructions, please see K. V. Subbarao's forthcoming paper on Causative Constructions and Hindi.

Mallika's discussion of negative inside action nominals is at best unclear. Newmeyer claimed that negation cannot occur inside action nominals. By saying that sentence (50) in the paper cannot be interpreted as factive, I was only saying that there is negation inside action nominal.

Commenting on my analysis of the Telugu sentence *āsvāḍu kenneḍini hatya cēsēḍu* 'Oswald murdered Kennedy', M says that some verbs can have two objects. I agree with her. However, the distinction she is trying to make between "the object of a verb" and "the object of a VP" is not clear as they do not seem to be standard usages. (A common example of double object verb is *give*, which has as the direct object the object given and as indirect object the recipient). With my knowledge of Malayalam, which is close to null, it seems to me that *pustakam* and *bhaarya* in

ñaan pustakam tarjama ceytu
I book translate did 'I translated the book' and
ayaaḷ bhaaryaye kuṭṭam paRañṇu
he wife+accusative blame said 'He blamed his wife'

are the direct objects of the verbs *tarjama cey* 'translate' and *kuṭṭam paR*? 'blame', where these verbs are like Telugu *hatya cēs* 'murder' and *pūjinc* 'worship'. In

ñaan pustakattinRe tarjama ceytu, and
ayaaḷ bhaaryayute kuṭṭam paRañṇu,
tarjama and *kuṭṭam* seem to be the objects of *cey* and *paR*.

Also, since the point concerning a higher predicate deciding the complement type is same as the one Sreekumari brought up, please see the reply to her comment.

M is right in saying that the application of the Verb-Demoting rule is to be restricted to apply only to certain nouns dominated by verbs. For example the fact that corresponding to (1) and (3) we have (2) and (4) shows that in (1) Rama is the object whereas in (3) the object is *kuṭṭam*.¹

- (1) ayaaḷ raamane kuṭṭam parañṇu
he Rama+accus. told bad things
'He blamed Rama'
- (2) ayaaḷ kuṭṭam parañṇa raaman
'Rama whom he blamed'
- (3) ayaaḷ raamande kuṭṭam parañṇu
he Rama+about bad things told
'He blamed Rama' (lit. He told bad things about Rama)

1. I am thankful to Mrs. M. T. Mathew for giving the Malayalam data.

- (4) *ayaaḷ parañña kuṭṭam*
 he told bad things
 'The bad things he told'

General comments

It has been a very stimulating experience to go through the comments of several scholars and trying to answer them. I am thankful to all my reviewers. I like to make some general comments here which do not seem to fit anywhere else but nonetheless seem relevant. There are some interesting questions that deserve to be answered before one can say one has a handle on the processes identified in the paper.

1) What is the best way to relate pairs such as *improve-make improvement*, where *make* appears to be a dummy verb and *improvement* is to be dominated by both V and N (in that order)? Since Verb-Demoting cannot produce such a structure, can we propose a similar rule, call it Noun-Promoting, which, if not applied results in the insertion of a dummy verb? If so, without a verb in the underlying representation what kind of strict subcategorization features and selectional restrictions can be used?

2) If there is a Verb-Demoting rule why is it that the "demoted" verb becomes the direct object and in some cases the original direct object becomes the indirect object? Of course, an exact same problem is encountered elsewhere, too. The question "What did you do to her?" can be answered with "I kissed her.", where "she" is the direct object of "kissing" and the indirect object of "do".

3) How can we account for the fact that some verbs are derived from nouns in some languages, whereas in some other languages their equivalents are derived the other way? E. g., Tel. *prakaṭana* (V)-*prakaṭinc* (V), Eng. *announce* (V)-*announcement* (N).

4) As Halle (1973) points out certain English derived nominals do undergo the stress rules in two cycles as opposed to many others that do. Is there an explanation?

N. Krishnaswamy

C. I. E. F. L. Hyderabad

A Professor of Philosophy used to ask the same questions every year and when he was asked why he asked the same questions every year he remarked, 'The questions in philosophy are the same

but the answers are different.' This is true of linguistics too. Satyanarayana's article takes up one such question of systematic semantic correlation between nouns and verbs, adjectives and verbs, and adjectives and nouns. Various answers have been given by philosophers and grammarians, both Western and Indian, but the motivations are different. The philosophers have used semantic motivations; some grammarians have used phonological and syntactic motivations; one can also use historical and psycholinguistic motivations. What is important is the argument and not solution; perhaps, there are no solutions. Satyanarayana has at least framed the question in a proper way and that itself is a remarkable achievement.

The two category-changing rules that are proposed as 'entirely new' look rather suspicious. One can ask a question: What are the motivations for setting up category-changing rules?

1. In languages where stress is significant, stress-prediction may be a motivation.

2. In languages where stress is not significant (as in the case of Telugu) one has to study word-formation, synchronically and diachronically, and arrive at some generalization regarding category change. Even assuming that we take an arbitrary decision regarding the derivation of verbs from nouns or nouns from verbs (since we have to assume that one is primary and the other one is derived), the category-changing rules may have to be subcategorized and sub-subcategorized and ultimately we'll end up in a taxonomic grammar, which possibly is a linguistic sin. The *-inc* suffixation rule cannot obviously account for all the noun-verb relations. In some cases the noun has to be distorted and entered in the lexicon without the final 'in' as *kaṣṭam*.

In Tamil, as in the case of several other languages, there are certain words like 'kaadali' (love), which are used both as nouns and verbs. Any decision that is taken regarding the derivation of such words is bound to be arbitrary. In the lexicon they have to be entered both as N and V or both may have an underlying form *kaadal* (love), in which case there should be rules like $N \rightarrow N$ (*kaadal* \rightarrow *kaadali* (N)) and $N \rightarrow V$.

There are also cases where there is no direct domination. For example, words like 'nallavan' (one who is good) should be derived as 'nalla' (Adjective) + *avan* and the adjective derived from 'nanmai' (good), a noun. Or the adjective has to be entered in the lexicon as 'nal', in which case we will be leaving out the relationship between 'nalla' and 'nanmai'. In addition to phonology and syntax, etymology has to be brought in.

Satyanarayana himself feels that in some cases both (nouns and verbs) should be derived from a neutral form (p. 341). Setting up a neutral form or an abstract underlying structure has become a linguistic gymnastics and it shows only an escape from reality.

Is it not safe to assume that the principle of taxonomy is as important as the principle of relationship in the structure of language?

P. B. Pandit and C. Ramarao

University of Delhi

Some nouns are derived as verbs and some verbs are derived as nouns. Languages which have inflectional and derivative affixes and which have morpheme classes (among others) of nouns, verbs, adjectives and adverbs do also have rules by which stems of one class can be derived as stems of another class. This information is as old as the grammars.

In the context of recent theories of grammar, according to the author of the paper under discussion, the lexicalists and the semanticists have not been able to account for this derivation. The main 'proposal' of this paper is that the following two rules

1. $V \rightarrow N$

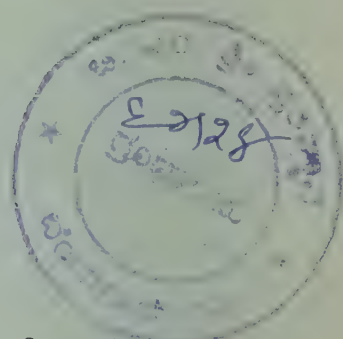
2. $N \rightarrow V$

should be added to the Phrase Structure component of a transformational grammar.

According to the author, these are 'essentially category-changing rules', and 'the linguistic theory should expand the scope of the PS component of grammars' (p. 327). One wonders, why a derivational process, which has been well taken care of by grammarians, should be incorporated in the PS rules; moreover, if it has to be incorporated in the PS rules, why should it be limited to the changes of the class membership between N and V? It is known that, at this level, there could be many more derivational devices in a language by which all stems, nouns, verbs, adverbs, adjectives etc. could change their classes. Why, then, the author's 'proposal' be not altered to

		N
V	→	Adj
		Adv

		V	
N	→	Adj	
		Adv	
		N	
Adj	→	Adv	
		V	etc. etc.



Examples can be found, from various languages, of such derivational processes. Telugu supplies the examples of

	Adj.		Noun		Verb
1.	pulla 'sour'		pulupu		pulla badu
	erra 'red'		erupu		errabadu
2.	Adv.				Verb
	wenaka 'behind'		wenakabadu		
	wenta 'along'		wentabadu		
					etc. etc.

In our opinion, the author has confused between 'classes' and 'categories'. Classes are relevant for morphological processes, and categories are relevant for syntactic relations. The author has not shown any syntactic motivation to include the category changing rules in the PS component. The verb demoting rule, though interesting, has no consequences for the category changing proposal.

What are the generalisations that the author wants to capture by the proposed rules? Members of different classes (categories?) have certain phonological and semantic similarities; is it the purpose of the PS component to account for the shape and meaning similarities of the lexical items?

The stylistic fall out of such exercises is interesting and intriguing. Current fashions in linguistics require that the initiated shall make 'proposals'; they shall ignore all that has been written in paradigms other than their own; they shall refer to only those authors who belong to the chosen paradigm and then make 'claims'; The paper provides a good specimen of this genre. The author thinks that the "need for a rule that drops morpheme final short vowels before a vowel has been shown elsewhere, (i. e. Subbarao 1971)" "(p. 340); Similarly," since -inc is a verbal suffix any way as Subbarao has pointed out (P. 342)". That the formulation of the Sandhi rule and the identity of the verbal suffix are as old as Telugu grammars is conveniently forgotten.

This one, of course, takes the cake: "a theory which likes and wants to capitalise on this rule will have to postulate that Sanskrit borrowings *kaṣṭa*, *radha* (sic), *dhana* etc. are also nouns (P. 342)". It is rather late in the day for the students of (Sanskrit and Telugu) grammars, to 'postulate' that *kaṣṭa*, *dhana* etc. are nouns. Why the tilting of the sword?

P. H. Mathews

University of Reading

I have taken a fresh look at Dr. Satyanarayana's article, in the hope that I might be able to contribute something of value. But I find myself faced with two insuperable difficulties :-

Firstly, these are surely problems in what is conventionally called 'derivational morphology': certainly this is so for English, and so far as I can judge it appears to hold for Telugu also. But can derivational morphology – the study of the formation of lexical items – be studied by what are basically syntactic techniques? Surely the plain and obvious answer is No, and it is really that answer which Chomsky gave in his article in the Jacobs & Rosenbaum collection. In addition, can the problems of the lexicon be handled at all, whether in 'transformational' or in 'lexicalist' terms, within the framework of a generative grammar? Here the answer is perhaps not so plain and obvious, but for my part I, at least, would again say No. The formations are characteristically semiproductive: one cannot say that there is a fixed list of English Nouns in *-ion* (i. e., that the formation is dead or non-productive), nor yet that for any Verb there is a perfectly good Noun in Verb + *-ion* (i.e., that the formation is fully productive), but only that such a formation exists, that new Nouns of the class may be coined at any time, that the precise membership of the class must therefore be indeterminate, and so on. But how can one talk of indeterminacy in a grammar of the 'all and only type? Of course, I cannot be sure that the same argument apply to Telugu also, but I would have thought that the question is at least worth raising.

Secondly, is this really a paper, as Dr. Satyanarayana says, on 'revising the phrase-structure component' of a transformational grammar? Obviously he would not agree with the remarks that I have made in the preceding paragraphs, but surely it is these that are the central issues in the area that he has chosen to investigate. In a real sense, does it matter what rule Chomsky wrote in *Aspects of the Theory of Syntax*? The rules in that book are not consistent from one page to another anyway. Does it matter, indeed, precisely

how the base rules are going to be organised? The crucial point is what sort of statements one wants to make about this aspect of language: in generativist terms, does one adopt a transformationalist or a lexicalist standpoint? No phrase-structure trees or phrase-structure rules are going to give the slightest help in solving this problem. When one *has* solved it then, of course, we can come down to the notational question, but even then the precise structures one can establish may differ from English to Telugu to Navaho, and so on. Basically these are notational and descriptive problems, not theoretical problems in the true sense.

I am sure that you will by now appreciate the difficulties which I have referred to. I could, of course, write a very long article setting forth the fundamental questions at issue; but I do not think this is what you want and, in addition, it would duplicate parts of another contribution which I already have in the press. I could also write a very brief note - the preceding paragraphs with, perhaps, some reference to the latter as well as the spirit of Dr. Satyanarayana's paper. But it seems to me that this would be bound to appear a trifle rude: I do think that Dr. Satyanarayana is grappling with a real problem, I do think that the transformational literature is almost designed to confuse the issues rather than to clarify them, and I certainly would not wish to give the impression that I regarded his paper as worthless or incompetent. It seems to me that in these circumstances the only thing I can really do is to remain silent. I felt that this was probably so when I last wrote to you in September - and, well all I can say is that I have at least tried.

P. S. I would have no objection if you were to show this letter to Dr. Satyanarayana, provided you do not think he would be offended. If you did so, I wonder if I might perhaps draw his attention to a book of mine which will appear next year, in which I do discuss the matter of my second paragraph from a non-transformational standpoint. The details are as follows:-

P. H. Mathews, *Morphology: an Introduction to the Theory of Word Structure* (Cambridge Studies in Linguistics Textbooks Series, 1). Cambridge: Cambridge University Press.

Although it is a student's introduction, I do discuss these questions at a relatively advanced though informal level (Chs. X and beginning of Ch. XII; also more traditionally in Ch. III). I am only sorry that the book is not yet available in print; I hope he will not think it an impertinence if I mention it at this stage.

Comments on these three late notes will be published in the next issue. Ed.

REVIEW

TOLKAAPPIYAMUM NANNUULUM

A Comparative Study of Tamil Grammars. Tolkaappiyam and Nannuul-pp. 280, Price Rs. 10/- by Raa. Seenivasan, M. A., M. Litt. Professor of Tamil, Pachaiyappa's College, Madras : Publishers - Prakasam, 22, Chellammal Street, Madras 30.

M. Elayaperumal
University of Kerala

A Comparative study of the traditional grammars of different periods, like that of literature helps us to understand the changes in Phonology, Morphology and Syntax. The Tamil Language has a wealth of Grammatical Literature, the earliest and foremost being Tolkaappiyam which is followed by Viiracooliyam, Nannuul, etc. Sivangaṇa Munivar, one of the distinguished commentators has given a short list of the changes made by the author of Nannuul, in his MutaRcuuttiravirutti. This has been elaborately dealt with by Veḷḷai Vaaraṇaṇaar in his books 'Tolkaappiyam Nannuul; Eluttatikaaram, and Collatikaaram.

The book under review has a few attractive qualities which are useful to students of Tamil Grammar.

1. The author has simplified the grammatical statements into easy and pleasant reading material, giving the relevant sutras as foot-note for ready reference.

2. Besides the traditional examples given by the ancient commentators, the author has tried to give suitable examples from modern Tamil to illustrate some grammatical rules. Eg. Vaayppu (P. 26), aaciriyar aṇṇalakan (P. 168) Carinikar camaṇṇam (P. 262) Cettaal teriyum ceṭṭiyaar vaalvu (P. 259).

3. Though the name of the chapters of this book are modelled after Tolkaappiyam with the exception of the last three, the contents of each chapter is classified on the basis of the topics treated. The

classification of Sandhi Rules on the basis of Sandhi changes (pp. 97-140) deserves special mention.

4. In the last three chapters which deal with Caariyai, Poetical usages, word and meaning respectively, the author has given collectively the ideas given by Tolkaappiyar here and there.

5. The author has added new explanation of his own for certain grammatical categories. For example, explanation for a sutra of Tolkaappiyam Eluttatikaaram (P. 27) for tokai marapu (P. 85) and for "Caariyai" (P. 86).

6. Comments are given as a result of comparing the ideas of grammarians with those of linguistics on the production of certain sounds. (P. 41)

7. The author's observation that the introduction of the segmentation of words into pakuti, vikuti etc. and of the process of tadbhava of Sanskrit words by Nannuul is due to the influence of Viiracooliyam (p. 47 and 49) is noteworthy.

8. The special rules of Nannuul are summarised and listed at the end of many chapters for eg. pp. 113, 132, 148.

In the next edition, I suggest that the author will make the following modifications.

1. He will specifically list the differences between Tolkaappiyam and Nannuul exhaustively and classify them under various heads like addition, modification, deviations, omissions, etc. This will be more useful to research scholars who are interested in noting the differences for historical development of Tamil language.

2. The ideas of the commentators should be distinguished from those of Tolkaappiyar. This will help the student to note the later changes. On page 35 it is stated that short au is mentioned by Tolkaappiyar. But it is added by the commentator, Naccinaarkkinniyar.

3. A few categories which are not illustrated with examples (Eg. compounds P. 251) are not clear. They may be supplied in the next edition.

4. An exhaustive index of the grammatical terms with definition and example need to be added, at the end of the book for ready reference.

5. Misleading statements like that of av (p. 34) which tempts one to think that Tolkaappiyar has referred to 'av' as the alternant form of au and of the empty-morphs which occur with the verbs of

second person which makes one to think that the author of Nannuul has included ikum and cin in them, should be clearly stated.

6. The spelling of certain words are altered but not explained. For eg. Nañkai and annai are written as nañkay and annay (p 203) and makanRaaykkalaam is found without sandhi change and elongation of "aa" (p. 132)

7. Printers' errors like the following give room for misunderstanding in a grammar book like this:

ikal instead of ital (p. 37) Componn for Cemponn (P. 63)

kari for KaRi (p. 65) makallan for makanallan (P. 166)

uṭan for uṭaiyan (P. 177) This may be avoided by an errata in the next edition.

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- A. M. Ghatage *etal* : *Studies in Historical Sanskrit Lexicography*, Deccan College, Poona 1973 Rs. 12.
- H. S. Ananthanarayana : *A Prakrit Reader*, C.I.I.L, Mysor, 1973 Rs. 6
- Lakshmi Bai Balachandran : *A Case Grammar of Hindi*, C.T.H, Agra, 1973 Rs. 10
- Soppo Koskeniemi *etal* : *Material for the Study of the Indus Script*, Suomalainen, Tiedeakademie, Helsinki, 1973
- T. V. Veeracaami : *Tamil Naaval munnoottam* Mercury Puttaka Company Coimbatore 1973 Rs. 4 (Tamil)
- V. R. Prabodhachandran Nayar : *Malayalam - A linguistic description*, National Research Publishing Company Trivandrum 1975 Rs. 20
- P. Ramachandran Pillai : *Language of Middle Malayalam*, D. L. A. Publication No. 9 Trivandrum, 1973 Rs. 40
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- Natana Kaacinaatan : *Kanyakumari Inscriptions* Vol. I to III Archeology Department, Tamil Nadu, Madras 1972.
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- Natana Kaacinaatan : *Kaalaccuvaṭukaḷ*, Ceekar patipakam, 56, Usman Road, T'Nagar, Madras-17, 1973, Rs. 2.50 (Tamil)
- R. Ciinivaasan : *Caṅka ilakkiyattil uvamaikaḷ*, Aṇiyakam, 22 Cellammal street, Madras 30, 1973, B 15 (Tamil)
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- S. Rajaram : *moḷiyum moḷiyiyalum*, Sivakaami acakam, Annamalai Nagar 1973 Rs. 6 (Tamil)

(to continue)

PUBLICATIONS OF THE D. L. A.

(Available at half of the published price for Life members)

	Price
1. Vowel Duration in Malayalam-An Acoustic Phonetic Study S. Velayudhan	Rs. 4.00 U. S. \$ 1 00
2. Telugu-An Intensive Course, N. Sivaramamurti	Rs. 5.50 U. S. \$ 1 50
3. Souvenir of the First All India Conference of Dravidian Linguists	Rs. 4.00 U. S. \$ 1 00
4. Malayalam verbal forms V. R. Prabodhachandran	Rs. 30.00 U. S. \$ 8 00
5. Intensive Course in Malayalam, A. P. Andrewskutty	Rs. 6.00 U. S. \$ 1 75
6. Bilingualism-a bibliography R. Solomon	Rs. 4.00 U. S. \$ 1 75
7. The International Journal of Dravidian Linguistic [the Semi] Official Bulletin of the DLA (Free to members)] Yearly Subscription	Rs. 25.00 U. S. \$ 5 00
8. Proceedings of the First Conference of Dravidian Linguists, Asst. Ed. E. Valentine Ed. V. I. Subramonian	Rs. 40.00 U. S. \$ 10 00
9. Language of Middle Malayalam P. Ramachandran Pillai	Rs. 40 U. S. \$ 12 00
10. Muslim Dialect of Malayalam G. K. Panikkar	Rs. 30.00 \$ 10 00
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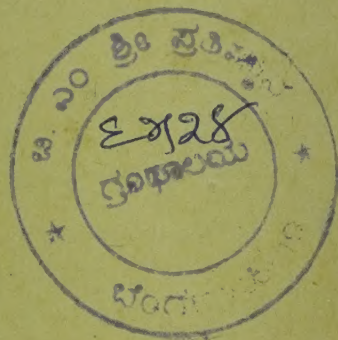
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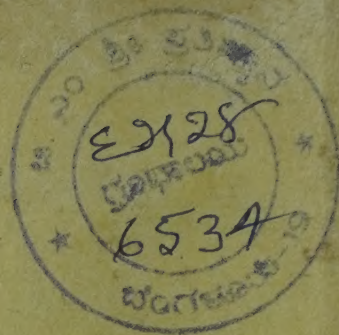
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